PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 112, No. 26 Thursday, June 26, 1941 Price Ten Cents

Superintendents Meet at Poland Spring, Me.

Oscar Stamets of the Riegel Paper Corp. Is Chosen President For the Ensuing Year — Association Will Meet Next Year At Grand Rapids, Mich. — Unusually Interesting Program Is Presented.

POLAND SPRING, Me., June 23, 1941.—The American Pulp and Paper Mill Superintendents Association held its twenty-second annual convention at the Poland Spring House, Poland Spring, Me. June 17-18-19, 1941.

Fine Weather and Splendid Location

The members and their guests began to arrive as early as Saturday noon and by Monday night a very large share of the people had arrived although the first meeting was not until Tuesday morning at 11:00 o'clock. The splendid location and the fine weather were undoubtedly responsible for the early arrivals. The Allied Industrial Affiliates had their dinner on Monday night.

At 11:00 A.M. Tuesday morning the President, A. B. C. Drew called the meeting to order. The Rev. H. E. Townsend of the Westbrook Universalist Church delivered the invocation.

Robert L. Eminger, the National Secretary read the names of the members who had passed away in the previous year and the Rev. Townsend delivered a short memorial.

The association members and their guests were then welcomed to Poland Spring by Hobart Kilgore, a Selectman from the Town of Poland. Mr. Stamets the first vice president made the response.

A. B. C. Drew the president then delivered the annual President's message as follows:—

I beg to submit herewith my annual message as president, for the year ending June 19th, 1941.

With your permission I would like to refer for a moment to the subject that is in the minds of us all. (Our National Defense Program.)

We have before us many serious problems shrouded in the deepest mysteries which no man can possibly fathom. It is a year of caution and no man should venture to fight single handed as in the past. We should analyze our work as never before, and we should do it both individually and collectively. We should help each other by backing up our association, collecting and distributing all information asked of us. We should have enough confidence in our association to know that all information we give will be in confidence and remember if we are suspicious of our associates, they will be suspicious of us.

OSCAR STAMETS
President

DIVISIONAL MEETINGS

Our divisional officers are to be congratulated on the manner in which they have organized the work of the several divisions and maintaining the interest of their members.

The Allied Industries have contributed very materially to the success of our meetings, bringing to us many vital technical and practical improvements in connection with the pulp and paper indus-

try. Having attended many divisional meetings, I am pleased to report the usual high standard maintained, many important papers were offered and discussed, which were also printed in our official organ, *The Paper Mill News.*

Let me recall a few of the important papers.

Bursting strength and stretch of wet pulp sheets.

White water—Why use it?

Vertical water removal on heavy paper and board.

Physical properties of kraft.

Coloring and matching paper samples.

Paper mill lubrication.

Machine room ventilation.

Making a clean up in paper.

Performance of machine wires—cylinder moulds—and lubrication.

Many papers on modern paper machinery and accessories.

Divisional meetings with at least two good subjects as a lead and plenty of open discussions are the greatest value to our association and its members.

I cannot urge too strongly the fact that if the division to which any of you belong is not functioning as you believe it should, it is your duty as an individual member to do something to assist in bringing about a normal activity.

Allied Industrial Affiliates

Among the recommendations authorized at our 21st annual convention held in the city of Cincinnati, Ohio, I am pleased to report especially on our Industrial Affiliate program, which is most favorable.

We have to date some sixty odd affiliate firms.

Each firm has been presented a framed certificate of affiliation.

Credit is due our secretary-treasurer, Robert L. Eminger and our field secretary, George W. Craigie.

As I have made the statement—to start from the ground floor on an undertaking such as this, and reach the success that we have, is no small matter.

On behalf of our association I wish to thank our new affiliates for their cooperation.

A committee has been appointed from our association to work with a like committee from the affiliates to formulate future definite plans, to the mutual good of our association and affiliates.

Our secretary-treasurer, Robert L. Eminger, has performed the duties of his office, sincerely and faithfully to the best of his ability, if you want to know anything about our association, ask Bob.

S. G. Blankinship
Second Vice President

Our field secretary, George W. Craigie, as convention manager, is highly commendable. One does not realize the work involved in connection with our convention.

To these gentlemen who have in every way given their honest and sincere cooperation, I wish to extend my heartiest appreciation.

Membership Certificates

At a meeting of the Board of Trustees it was voted to present a membership certificate to each association member. This has been carried out. Each member should be proud to hang his certificate in a most conspicuous place.

Our Parent Association

To the president of the American Paper and Pulp Association, J. L. Riegel, we are deeply appreciative for the hearty cooperation and assistance given in our work.

To E. W. Tinker, executive secretary, on behalf of our association I wish to extend our sincere thanks

Grover Keeth
First Vice President

Raymond S. Barton
Third Vice President

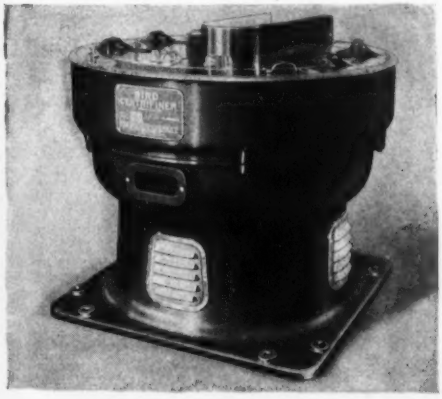
"AMONG THOSE PRESENT"

wherever good paper and lots of it is made at low cost per ton

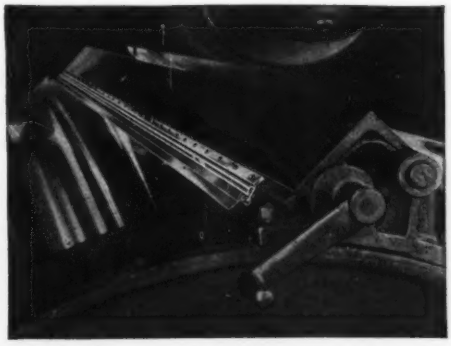
THE BIRD SCREEN — provides the correct combination of large screening capacity and efficient screening action, using the finest possible screen slots for your grade of stock. Modern Bird Screens are essential for *more and better paper* at lowest screening cost per ton.

THE BIRD PURIFINER — for continuous removal of both light and heavy dirt from paper stock. Simple, compact, no moving parts — the most recent advance in dirt removal equipment.

THE BIRD SAVE-ALL — essential under today's conditions for mills dependent on outside sources of stock. Recovers stock from waste water at lowest net cost per pound. Puts both fibre and water in shape for immediate re-use.

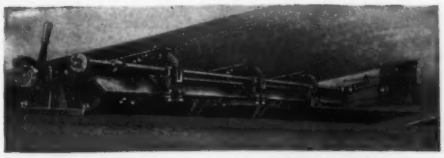


THE VICKERY FELT CONDITIONER—a "natural" for those whose problem is increased output from existing paper machines. Assures continuous, uniform press felt operation without shut-downs for wash-ups.



THE VICKERY DOCTOR—engineered expressly to keep each paper-making roll in shape to do its best work — ideal for press rolls, breast rolls, wire rolls, dryers, calender and super-calender rolls both steel and composition.

THE BIRD CENTRIFINER — with the exclusive triple treatment operation that assures cleanest, most salable paper with a minimum of rejects.



For full information, layouts and estimates get in touch with

BIRD MACHINE COMPANY

SOUTH WALPOLE · MASSACHUSETTS

for his cooperation. He has always been ready to assist our association whenever possible.

At this point I wish to mention the very pleasant and cooperative relations existing between our Association and The Technical Association of the Pulp and Paper Industry, and the Salesmen's Association of the Paper Industry.

Your president has had the honor of serving on committees of the several associations.

We would be guilty of a great indiscretion were we to omit reference to our official organ—*The Paper Mill News.* I wish to express my sincere appreciation for their cooperation and for the publicity which they have given to the work of our association during the year. Also to all other trade papers who have cooperated, I want to express my appreciation.

MEMBERSHIP DUES

To run any business successfully it is necessary that the income to that business should be equal to the value in that business. Our association after all is a business. I hesitate somewhat to call your attention to the fact that there are members who are in arrears for dues. Most of the cases, I believe, are a matter of carelessness on the part of these several members. It becomes the duty of your president to call this to their attention, asking that they get in touch with our secretary-treasurer.

To have a successful association it is necessary that the members devote attention to association duties. They must realize that individual effort is important. No activity can carry itself along by its own motion. Frequently people do not recognize the value which is obtained from Association work.

Are you a good Association Member
The kind that would be missed
Or are you just contented
Your name is on the list?
Do you attend the Divisional Meetings
And mingle with the flock
Or do you stay at home
To criticize and knock?
Do you take an active part
To help the work along
Or are you satisfied
To only just belong?
Think this over, Brother
You know right from wrong

NILES M. ANDERSON
Fourth Vice President

R. L. EMINGER
Secretary-Treasurer

Are you an active member
Or do you just belong?

You have honored me as your president and before passing into oblivion as all presidents do, I want to thank you from the bottom of my heart for the splendid support you have given me, and for the many acts of friendship you have shown me. I shall pass into the ranks with gratitude in my soul, forever mindful of the cordial acknowledgment you have given the small service it has been my pleasure to render you.

Committees Appointed

President Drew then appointed the following committees to function during the convention—

Auditing—Oscar Stamets — chairman, Grover Keeth, Raymond Barton.

Resolutions—K. E. Terry—chairman, Harry Weston, Arnold Weller.

Nominating—W. H. Brydges—chairman, Charles Champion, H. H. Harrison, David F. Hayes.

The meeting was then adjourned and the members went in to lunch.

John E. Hyde Presides at Luncheon

The Toastmaster at the luncheon was John E. Hyde—vice president of the S. O. Warren Company and the principle speaker was the Hon. Sumner Sewall, the Governor of Maine, who spoke on the necessity for conservation of the woodlands and of the prevention and control of the fire menace in the woods, which is especially dangerous this year because of the rain shortage.

First General Conference

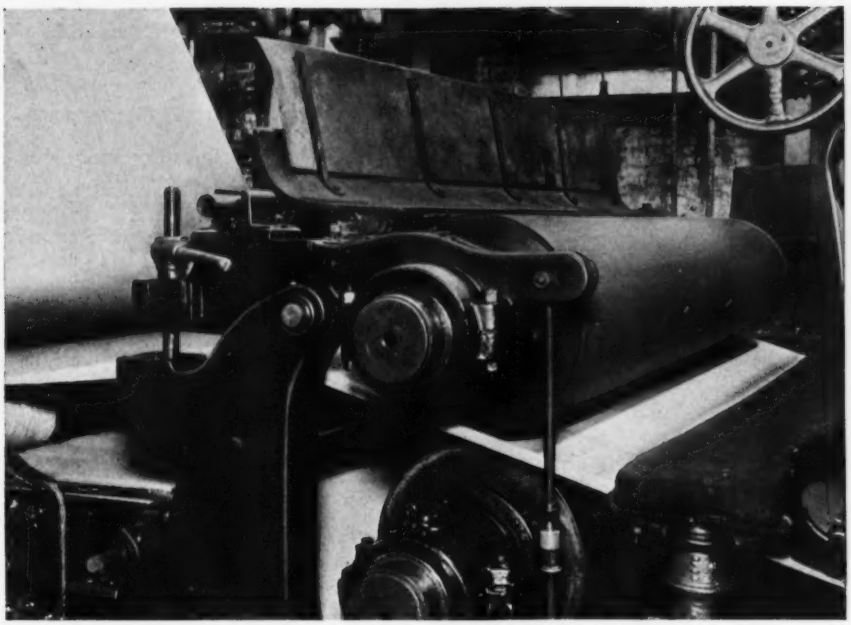
At 2:00 P.M. the first General Conference was held with President Drew presiding. The following informative papers were presented—

"Proper Us of Cypress in the Paper Mill"—John Reno, Florida-Louisiana Red Cypress Company, Jacksonville, Florida.

"Current Methods of Purifying Water for the Paper Mill"—A. F. McConnell, Permutit Company, New York, N. Y.

"Recent Developments in Labor Legislation"—Alan Goldsmith, Vice-President, Mead Corporation, Chillicothe, Ohio.

At 7:00 P.M. a stag dinner was held for the mem-



TESTED BY TIME...
and more than 2100 installations

Which rolls are best for top press and smoothing roll service? On over 2100 occasions, leading papermakers said "STONITE*!" Performance facts based on nearly 60 million hours of operation prove conclusively that STONITES* will:

- **Improve surface finish.**
- **Reduce pick-ups and breaks.**
- **Resist scoring and cracking.**
- **Improve the safety and efficiency of operation.**

Experience favors STONITE* . . . why experiment?

***(*Ebonite and Granulated Stone Composite U. S. Patent 1,787,890 Re. 18,111*)**

Stowe-Woodward

THE RUBBER ROLL SPECIALISTS

Newton Upper Falls, Mass.

bers and guests. The Master of Ceremonies was C. W. Stewart of the Parker-Young Company. The speaker was Bertrand L. Shurttipp an ex-college and professional football player and wrestler who pointed out the absurdities in professional wrestling used to amuse and trick the spectators. Following this there were various entertainments highlighted by a boxing match.

Wednesday's Group Meetings

Wednesday morning the group meetings were held as follows:—

BOARD

Chairman—Ollie W. Messner, Robertson Paper Box Co., Montville, Conn.

1. "The Dilts-Cowles Hydrapulper, Its Design and Application"—E. M. Root, Dilts Machine Works, Fulton, N. Y.
2. "Development of Stream-Flow Vat System" — Philip H. Goldsmith, Pusey and Jones Corporation, Wilmington, Del.
3. Motion Picture—"Bringing the Cylinder Machine Up to Date"—Leon E. Smith, Downingtown Manufacturing Company, Downingtown, Pa.

FINE PAPERS

Chairman—Daniel J. Walsh, Parker-Young Company, Lincoln, N. H.

1. "A New Means for Reclaiming Pulp"—Theodore P. Steinmetz, Norwood Engineering Company, Florence, Mass.
2. "Sandy Hill Betrams Flow Distributor Control of Approach Flow to the Fourdrinier"—Allen A. Lowe, Field Engineer, Sandy Hill Iron and Brass Works, Hudson Falls, N. Y.
3. "Graduated Temperatures for Paper Machine Dryers"—Frederick C. Stamm, Armstrong Machine Works, Three Rivers, Mich.

NEWS PRINT AND WRAPPING MEETING

Chairman: George E. Fuller, St. Croix Paper Company, Woodland, Me. Round table discussions.

TISSUE MEETING

Chairman: Benjamin E. Teale, Crane & Co., Dalton, Mass. Round table discussions.

Wednesday Luncheon

At 12:30 a joint luncheon was held in the picnic grove for the members and their guests.

In the afternoon there were tournaments in golf and horseshoes and a soft ball game.

At 5:00 the group was entertained by the Dorothy Mason Dancers who performed on the lawn in front of the main porch.

In the evening there was a joint dinner in the main dining room with J. W. Hemphill of the Johns-Manville Co. was Toastmaster. He presented the tournament prizes and introduced Bob Gorrie of the S. O. Warren Co. who entertained the crowd for an hour or so with his superb inpersonations. Following this there was dancing in the ballroom.

Thursday's Group Meetings

Thursday morning the group meetings were again held and the following papers were presented:

CHEMICAL PULP

Chairman—Stanford G. Blankinship, Port Royal Sales Company, New York, N. Y.

"Cooking of Soda Pulp," by Dr. T. H. Werner and Rudolph T. Greep, S. D. Warren Company, Cumberland Mills, Me.

"Some Further Experiences with Forced Circulation," by D. C. Porter, Kimberly-Clark Corporation, Neenah, Wis.

COATED PAPERS

Chairman—Dr. Frederick Frost, S. D. Warren Company, Cumberland Mills, Maine.

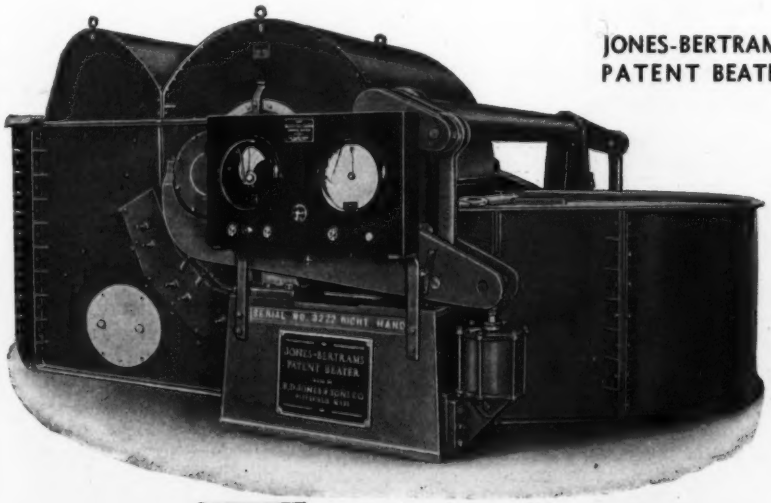
1. "The Known and Unknown Variables in Coating Color and Their Relation to the Problem of Coat-

ANNUAL BANQUET AT CONVENTION OF AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, THURSDAY EVENING, JUNE 19, 1941.

IN PAPER MAKING . . .

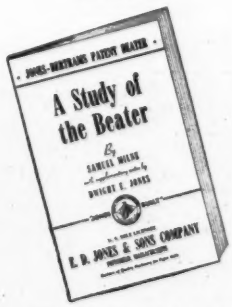
IT'S STILL TOWARDS THE BEATER

Progress marches on. But despite many new machines which endeavor to replace the beater, *paper is still made in the beater.* Today, the trend is still towards the beater . . . towards the automatically controlled Jones-Bertrams Patent Beater . . . as evidenced by a constantly increasing number of users. For this improved type of beater has been so highly developed in advanced features, it is years ahead of any other beater on the market. A few of its advantages are: efficient production of uniformly refined fibres; power savings up to fifty percent; automatic roll adjustment allowing absolute duplication of desired pulp characteristics, and saving of floor space. With a replacement ratio of 4 to 1 of the regular Hollander type, it allows for increased production or quality at a low capital investment per ton of product. Why not join the ever increasing number of Jones-Bertrams Patent Beater users? We believe you will if you get the facts.



JONES-BERTRAMS PATENT BEATER

OVER 315 SOLD IN ALL COUNTRIES — OVER 184 REPEAT ORDERS



Write for 64-page Booklet "A Study of the Beater."

Jones

E.D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills

ing"—Dr. B. Rowland, Institute of Paper Chemistry, Appleton, Wis.
2. "Type of Starches Available for Coating and Their Characteristics"—Glen Price, National Starch Products, South Boston, Mass.
3. "The Selection of the Calender Roll"—Ward O. Wheeler, Wheeler Calender Roll Company, Kalamazoo, Mich.
4. "The Problem of Froth Control"—Edwin Sutermeister, S. D. Warren Company, Cumberland Mills, Maine.
5. "Drying Coated Papers at High Speeds"—George Marsh, C. J. Merrill Company, Portland, Maine.
6. "The Effect of Weight and Density Variations on the Quality of Body Stocks"—J. J. Friel, Dill & Collins, Philadelphia, Pa.

FINISHING, STORING AND SHIPPING

Chairman—W. Douglas Sommerville, Eastern Corporation, Bangor, Maine.
1. "The Bracing of Rolls, Skids and Bundles of Paper for Carload Shipment"—J. G. Bucuss, Sales Manager Strapping Division, Acme Steel Company, 2840 Archer Avenue, Chicago, Ill.
2. "Governmental Requirements for Packaging Paper"—E. W. Spencer, Assistant Technical Director, U. S. Government Printing Office, Washington, D. C.
3. "The Prevention of Damage to Newsprint Paper" R. A. Fasold, Special Representative, Association of American Railroads, 59 East Van Buren Street, Chicago, Ill.

PLANT AND POWER ENGINEERS

Chairman—Mr. Grover Keeth, Marathon Paper Mills Co., Rothschild, Wis.
1. Motion Picture—"Fabrication of Carbon Molybdenum Steel Piping for All Welded High Pressure, High Temperature Steam Service"—S. J. Horrell, Blaw-Knox Company, Pittsburgh, Pa.

QUIZ PROGRAM—With three "experts."

After lunch the final General Conference was held and the reports of the various committees were read and the following officers elected for the next year.

The New Officers

President, Oscar Stamets, Riegel Paper Corporation, Riegelsville, N. J.

First Vice President, Grover Keeth, Marathon Paper Mills Co., Rothschild, Wisc.

Second Vice President, Stamford G. Blankinship, Port Royal Pulp and Paper Company, Ltd., New York, N. Y.

Third Vice President, Raymond L. Barton, Michigan Paper Company, Plainwell, Mich.

Fourth Vice President, Niles M. Anderson, St. Regis Kraft Company, Tacoma, Wash.

Fifth Vice President, Homer H. Latimer, Champion Paper and Fibre Company, Hamilton, Ohio.

Secretary-Treasurer, Robert L. Eminger.

The final informative paper was presented by Dr. Philip Thomas of the Westinghouse Electric Company, "New Horizons of Science."

To Meet Next at Grand Rapids

The convention site for 1942 was chosen to be at Grand Rapids, Mich. with headquarters at the Pantland Hotel.

It was announced at the conference that the registration for the meeting totaled 735.

At 5:00 P.M. a Band Concert was presented on the lawn by the S. O. Warren Company band.

In the evening the Convention was brought to a successful closing at the Annual Banquet and Dance. The Toastmaster at the banquet was Walter S. Wyman, the President of the Seaboard Paper Company and the principal speaker was Howard Pierce Davis of the Columbia Broadcasting System who spoke on events and trends in the world today and his interpretation of them.

A. B. C. Drew Honored

The Past President's Jewell was presented by Past-President F. C. Boyce to A. B. C. Drew.

The L. O. Post Memorial Watch was presented by J. J. O'Brien to A. B. C. Drew.

During the banquet the entertainment was furnished by the S. D. Warren's Men's Singing Club.

To entertain the ladies while the men were attending to the business of the convention there was arranged an attractive program of tournaments in the various activities available.

Papers in Technical Section

Many of the paper presented at the convention are printed in full in the Technical Section of this week's issue of the Paper Trade Journal on page 75.

Specialist To Serve Business Men

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 25, 1941—The appointment of 12 research, financial and trade specialists who will serve business men in the regional offices of the Department of Commerce was announced by Secretary Jesse Jones.

Their selection, he said, "is part of the general plan to streamline the activities of the Department bringing them more nearly in line with 1941 developments, thus providing more timely and complete information to government, industry and business."

Those appointed were: Roscoe B. Arant of the University of Mississippi; Virgil D. Cover, University teacher and transportation expert; W. Cornell Dechert, former statistical worker with the San Francisco Federal Reserve Bank; C. H. Henrikson, Jr., former research director of the National Association of Credit Men; Wesson S. Hetrais, former credit manager and banker; Robert H. Leding, former director of research of Lord & Thomas Advertising Agency; Eldon C. Shoup, former merchandising and sales manager for New England companies; Arnold L. Skinner of the Bureau of Foreign and Domestic Commerce; William A. Spurr, business analyst; James D. Studley of the Bureau of Foreign and Domestic Commerce; Joseph H. Taggart, former University professor; Bervard Nichols, former editor of monthly business reviews at Universities of Texas and Pittsburgh.

Waste Paper Price Stability

[FROM OUR REGULAR CORRESPONDENT]

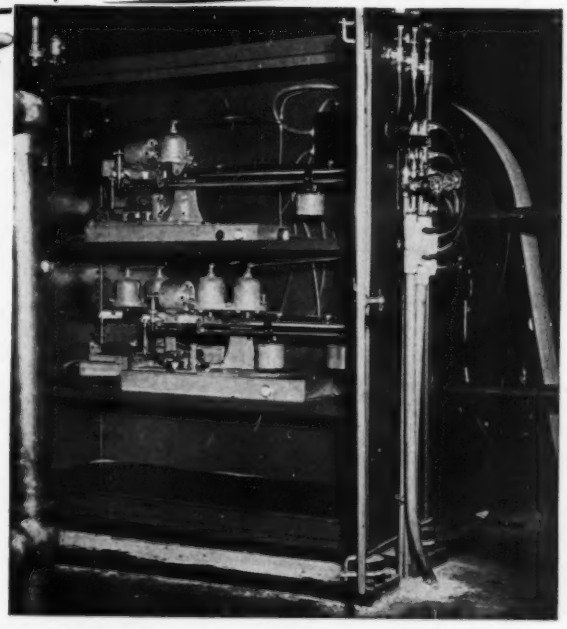
PHILADELPHIA, Pa., June 23, 1941—At a meeting held in Washington, D. C., this past week approximately fifty prominent waste paper dealers as individuals voluntarily pledged to the government stability of waste paper prices on the levels prevailing as of June 16. It amounted to a gentlemen's agreement among the paper stock dealers that between now and the first of August they will not raise the prices on the bulky grades above those that were in effect on the 16th of June.

IF YOU WANT REAL CONTROL FOR
Sheet Moisture Content, MODERNIZE
YOUR PAPER MACHINES WITH THIS NEW
PRESSURE REGULATING SYSTEM
P. S. — and specify it for new machines, too.
MOISTURE CONTENT OF SHEET
PRESSURE IN DRYERS

THE ARMSTRONG-STAMM MOISTURE CONTROL SYSTEM

THE Armstrong-Stamm Moisture Control System goes one important step farther than other modern pressure regulating systems for paper machine dryers. Instead of limiting the control solely to maintenance of UNIFORM PRESSURE, the Armstrong-Stamm System actually varies the pressure to automatically produce UNIFORM SHEET MOISTURE CONTENT!

The Armstrong-Stamm equipment is built specially and solely for paper machines. While the units are designed for fully automatic regulation they are also instantly responsive to manual operation at the will of the machine operator. We will be pleased to send you an interesting descriptive bulletin. Write today.



Above—Cabinet housing main pressure regulator, moisture content detector and flow regulator of an Armstrong-Stamm moisture control installation.

ARMSTRONG MACHINE WORKS

GRADUATED TEMPERATURE CONTROL SYSTEMS
•
MOISTURE CONTROL SYSTEMS
•
DRAINAGE SYSTEMS

PAPER MILL DIVISION
818 HOFFMAN STREET
THREE RIVERS, MICH.

RECORDING AIR RELIEF CONTROLLERS • AIR RELIEF VALVES • MOISTURE CONTROL DETECTORS • DRYER DRAINAGE RESTRICTORS • DRYER AIR EJECTORS • GRADUATED TEMPERATURE CONTROL VALVES • DRYER DRAINAGE UNITS • STEAM TRAPS • HUMIDIFIERS

Those Who Attended the Convention

A

Albert Allen, Foxboro Co.
I. Agronin, Shartle Bros. Machine Co.
J. E. Allen, Johnson & Johnson
Mr. and Mrs. Niles M. Anderson, St. Regis Paper Co.

B

G. D. Barber, Harris-Seybold-Potter Co.
Mr. and Mrs. Albert E. Bachmann, Missiquoi Corp.
Henry P. Baldwin, Consolidated Water Power and Paper Co.
H. C. Barbour, The West Virginia Pulpstone Corp.
Marshall Barker, The Beckett Paper Co.
Mr. and Mrs. W. L. Barker, Improved Paper Machinery Corp.
Mr. and Mrs. T. M. Barry, Fraser Paper Limited
Mr. and Mrs. Ray L. Barton, Michigan Paper Co.
Mr. and Mrs. George H. Batchelder, A. E. Staley Manufacturing Co.
Mr. and Mrs. Norman I. Bearse, Champion International Co.
Mr. and Mrs. Gene Bechard, Eastwood-Nealley Corp.
J. F. Bechman
F. K. Becker, Bird Machine Co.
Mr. and Mrs. Luther C. H. Beighey, Hammermill Paper Co.
Mr. and Mrs. C. H. Belvin, Jr., Chromium Corp. of America
Mr. and Mrs. M. H. Bennett, Stebbins Engineering and Manufacturing Co.
H. L. Berg, Bulkley, Dunton Pulp Co.
C. H. Bergman
Mr. and Mrs. L. H. Bidwell, Sr., Riegel Paper Corp.
Henry F. Bigelow, Pulp Division, Weyerhaeuser Timber Co.
N. A. Billings, Heller & Mertz
T. N. Bishop, Blaw-Knox Co.
Mr. and Mrs. D. H. Bissell, Chromium Corp. of America
Eric N. Blackstead, Ansbacher Siegle Corp.
Mr. and Mrs. David Blanchard, Magnus Chemical Co.
Mr. and Mrs. Stanford G. Blankinship, Port Royal Pulp and Paper Co., Ltd.
O. D. Blessing, The Dow Chemical Co.
Mr. and Mrs. J. E. Blosser, International Tissue Corp.
Kenneth B. Bolton, Titanium Pigment Corp.
Mr. and Mrs. P. S. Bolton, Clinton Sales Corp.
Mr. and Mrs. W. Gordon Booth, Robert Gair Co.
Mr. and Mrs. Bernard Bornstein and son, Norton Co.
Fred C. Boyce, Wisconsin Paper and Products Co.
Mr. and Mrs. L. N. Breyfogle, Draper Brothers Co.
Mr. and Mrs. Ralph Briggs, Draper Brothers Co.
Ralph E. Briggs, Jr.
Gordon W. Brown, Pulp Division, Weyerhaeuser Timber Co.
Mr. and Mrs. William E. Brown, American Wringer Co., Inc.
Mr. and Mrs. W. H. Brydges and daughter, Bedford Pulp and Paper Co.
J. G. Bucuss, Acme Steel Co.
J. G. Bullard, Corn Products Sales Co.
Mr. and Mrs. Arthur F. Burke, E. & F. King & Co., Inc.
W. Porter Burleigh, Bird Machine Co.
H. C. Burnett, New Haven Pulp and Board Co.
Mr. and Mrs. Harold H. Burrows, Manhattan Rubber Manufacturing Division
DeHaven Butterworth, H. W. Butterworth & Sons Co.
R. G. Bennett, General Electric Co.
C. L. Bachelder, Hercules Powder Co.
A. F. Bailey, DuPont de Nemours Co.
W. E. Bailey, Dilts Machine Works
F. G. Barber, Stein Hall Co., Inc.
Mr. and Mrs. R. R. Baker, Westinghouse Electric & Mfg. Co.
Mr. and Mrs. E. S. Barney, Cornell Wood Products
Wm. H. Barry, Brown Co.
A. C. Bate, American Cyanamid & Chem. Corp.
Mr. and Mrs. Russell Bauman, Johns-Manville Corp.
Mr. and Mrs. L. Beeman, St. Regis Paper Co.
O. D. Blessing, Dow Chemical Co.
H. Bogle, Central Fibre Products Co., Inc.
George Bogle, Central Fibre Products Co., Inc.
Mr. and Mrs. J. M. Booth, Huron Milling Co.
Alan Boyd, F. C. Huyck & Sons
G. D. Bowne, Westinghouse Electric & Mfg. Co.
A. O. Bragg, Diamond Alkali Co.
R. J. Brennan, Philadelphia Felt Co.
Mr. and Mrs. A. Brosius, Brown Co.
Mr. and Mrs. P. D. Bradley, Best Foster Dixfield Paper
R. Britton, Nat. Starch Products
A. F. Brunell, Hercules Powder Co.
Mrs. J. Brown, Wilson Wire Works
John Buss, Provincial Paper Co.
Ed. Butts, Jr., Stein-Hall & Co., Inc.

C

Egbert A. Cabble, William Cabble Excelsior Wire Manufacturing Co.
A. G. Caldwell
John G. Callen, The Foxboro Co.
Olin W. Callighan, Edgar Brothers Co.
George N. Carleton, Detroit Sulphite Pulp and Paper Co.
P. B. Carlson, SKF Industries, Inc.
Mr. and Mrs. William F. Carr, Joseph Parker & Son Co.
Mr. and Mrs. George S. Carroll and daughter, Monadnock Paper Mills
Ferri Casciani, Electro Bleaching Gas Co.
William S. Casparis, Orr Felt and Blanket Co.
Lauless M. Champagne, Gulf State Paper Corp.
C. H. Champion, R. T. Vanderbilt Co., Inc.
Charles Champion, Miller's Falls Paper Co.
Miss Frances Champion, Miller's Falls Paper Co.
Mr. and Mrs. Harold S. Chellis, Brown Co.
Warren A. Chilson, The Sandy Hill Iron and Brass Works
A. C. Clark
Mr. and Mrs. C. L. Clark and daughter, Nash Engineering Co.
Edwin W. Clark, E. C. Atkins & Co.
Harlan W. Clifton, Drycor Felt Co.
Frank H. Cole, Walworth Co.
C. M. Connor, Glassine Paper Co.
Mr. and Mrs. Abe Cooper, The Bagley & Sewall Co.
Oscar C. Cordes, Downingtown Manufacturing Co.
A. S. Cosler.
A. J. Crittenden, Algonquin Paper Corp.
Mr. and Mrs. J. F. Cronin, Cheney-Bigelow Wire Works
W. W. Cronkhite, General Electric Co.
Lester W. Crouse, Penick & Ford, Ltd., Inc.
L. M. Cushing, Brown Co.
Frank C. Campins, National Starch Products, Inc.
R. L. Carr, Mathieson Alkali Co.
C. E. Center, Westinghouse Electric & Mfg. Co.
W. B. Christie, Dominion Cellulose Corp.
S. Clayman, Clinton Co.
Mr. and Mrs. W. C. Clingan, SKF Industries
P. A. Collins, Warren Steam Pump Co.
Roy Cook, Downington Mfg. Co.
Mr. and Mrs. John Coppens, Fraser Paper Corp.
Mr. and Mrs. M. P. Cosgrove, Cosgrove Wire Cloth Co.
E. W. Crist, Hummel-Ross Fibre Corp.
C. D. Cummings, SKF Industries
Mr. and Mrs. Bryant Currier, W. S. Tyler Co.

D

John C. Dabney, Harris-Seybold-Potter Co.
C. H. Davidson, A. E. Staley Mfg. Co.
Mr. and Mrs. George Day, Brown Co.
Mr. and Mrs. Harry W. Deffew, Standard Paper Mfg. Co.
C. D. DeMers, Taylor Instrument Cos.
Miss Ruth Denison
Mr. and Mrs. V. S. Denison, Beloit Iron Works
Mr. and Mrs. Edward Docherty, Holyoke Wire Cloth Co.
George Docherty, Holyoke Wire Cloth Co.
F. Donovan
Mr. and Mrs. Joseph H. Dow, Castle & Overton, Inc.
Mr. and Mrs. Lewis Dozier, Rhinelander Paper Co.
Mr. and Mrs. Arthur B. C. Drew, New Bedford, Mass.
T. L. Dunbar, Chemipulp Process, Inc.
C. L. Durkee, D. J. Murray Co.
Mr. and Mrs. Clarence O. Duston, Stowe-Woodward, Inc.
P. E. Daley, Eastwood Nealley Corp.
E. A. Dawson, Turner Halsey Co.
Ed. C. Delano, Westinghouse Elec. & Mfg. Co.
Mr. and Mrs. T. E. Dial, Socony Vacuum Oil Co., Inc.
C. I. Dearborn, Johns-Manville Co.
J. D. Dickson, Jr., R. T. Vanderbilt Co.
F. A. Dieckbrader, Hinde & Dauch Paper Co.
Mr. and Mrs. G. A. Disbro, W. S. Tyler Co.
J. F. Dockum, Pittsburgh Plate Glass Co.
P. A. Donaghy, Corn Products Sales Co.
F. F. Dority, J. R. Booth, Ltd.
A. J. Dubuc, Turner Halsey Co.
Mr. and Mrs. L. M. Dunning, Reliance Elec. & Eng. Co.
Mr. and Mrs. John Durkin, Wilson Wire Works
H. E. Duston, Monsanto Chemical Co.

E

Mr. and Mrs. H. A. Eaton, Brown Co.
Homer Eaton, Michigan Alkali Co.
C. P. Eldred, A. E. Broughton Co.
H. O. Ehrisman, The Foxboro Co.
Mr. and Mrs. K. Ivar Ekholm, National Aniline and Chemical Co.
Mr. and Mrs. Charles L. Ellis, Downingtown Manufacturing Co.
Mr. and Mrs. Robert Eminger, National Sec.-Treas.
Ed. Engle

F

S. Fahlgren
Tom Falknor, Edgar Brothers Co.
Mr. and Mrs. Charles L. Ferguson, Oxford Paper Co.
William C. Ferguson, John W. Bolton & Sons, Inc.
Mr. and Mrs. James Fish, Paterson Parchment Co.
S. W. Fletcher, J. O. Ross Engineering Corp.
P. M. Foster, Williams Gray Co.
Carl Fowler, Paper Mill News
James A. Foxgrover, Hercules Powder Co.
Valentine Friedrich, Jr., The Beckett Paper Co.
Mr. and Mrs. Leroy D. Frisbie, Westfield River Paper Co., Inc.
Mr. and Mrs. Harry D. Frost, The Sinclair Co.
F. F. Frothingham, Bird Machine Co.
Mr. and Mrs. Albert E. Fuller, Merrimac Paper Co., Inc.
George E. Fuller, St. Croix Paper Co.
G. E. Fitch, Albany Felt Co.
L. E. Fitzgerald, Hercules Powder Co.
E. P. Floyd, Simonds Saw & Steel Co.
H. A. Fonda, SKF Industries
Wells Forbes, Taggart Corp.
Mr. and Mrs. L. P. Fortier, Everett Pulp & Paper Co.
N. M. Frisch, Stein Hall, Inc.
F. H. Frost, S. D. Warren Co.

G

Mr. and Mrs. Delbert Gardner, Great Northern Paper Co.
William A. Geiger, Pulp Division, Weyerhaeuser Timber Co.
Mr. and Mrs. O. P. Gephart, The Miamisburg Paper Co.
E. C. Gildenzopf, Schmidt & Ault Paper Co.
Mr. and Mrs. W. L. Gilman, Brown Co.
Mr. and Mrs. Arthur Ginn, Combustion Engineering Co.
Alan Goldsmith, Mead Corp.
Mr. and Mrs. Earl Grasse, Farrel Birmingham Co.
William Greeley, F. C. Huyck & Sons
Mr. and Mrs. W. E. Greene, Stowe-Woodward, Inc.
Rudolph T. Greep, S. D. Warren Co.
Alan H. Griffin, Riegel Paper Corp.
L. L. Griffiths, Jr., Williams-Gray Co.
Robert M. Guie, Philadelphia Felt Co.
A. Gault, W. S. Tyler Co.
W. S. Gibson, Dominion Cellulose, Ltd.
F. S. Gibbs, Wallace & Tiernan Co., Inc.
A. Gildersleeve, Sonoco Products Corp.
H. A. Gilman, Grand Bag & Paper Co.
J. W. Gregor
R. M. Guie, Philadelphia Felt Co.
O. J. Goeppinger, DeZurik Shower Co.
Mr. & Mrs. P. H. Goldsmith, Pusey & Jones Co. Corp.
R. M. Guie, Philadelphia Felt Co.

H

Donald M. Hall, Eastwood-Nealley Corp.
Edward Hall, Fitchburg Screen Plate Co.
John H. Hall, Warren Steam Pump Co.
Russell W. Hamilton, Nashua River Paper Co.
A. A. Harden, Corn Products Sales Co.
S. S. Harkavy, Geigy Co., Inc.
H. H. Harrison, The Crystal Tissue Co.
Walter I. Harte, John W. Bolton & Sons, Inc.
Ray E. Harter, R. T. Vanderbilt Co., Inc.
James Hawthorne, H. & T. McCluskey & Sons, Inc.
A. L. Hayes, Stein, Hall & Co., Inc.
Mr. and Mrs. David F. Hayes, Lawless Brothers Paper Mills, Inc.
James L. Hayes, Bemis Brothers Bag Co.
Mr. and Mrs. J. W. Hemphill, Johns-Manville Corp.
Ernest Clifford Hilton, Geigy Co., Inc.
Mr. and Mrs. Arthur L. Hinman, Crane Co.
F. C. Hoffman
W. F. Hoffman, Northwest Paper Co.
Mr. and Mrs. Arthur H. Holbrook, English China Clays Sales Corp.
Joseph L. Hoolihan, Port Huron Sulphite and Paper Co.
H. A. Horan, Penick & Ford, Ltd., Inc.

A COMPLETE RANGE OF BASIC DYESTUFFS FOR THE CONTINUOUS COLORING PROCESS

GENERAL DYESTUFF CORPORATION

435 HUDSON STREET, NEW YORK

Boston, Mass. Providence, R. I. Philadelphia, Pa.

Chicago, Ill. Charlotte, N. C. San Francisco, Cal.

S. J. Horrell, Blaw-Knox Co.
J. E. Hughes, Krebs Pigment & Color Corp.
J. Hyde
Allan Hyer, Black-Clawson Co.
E. H. Hall, Morey Paper Mill Supply Co.
G. B. Hall, Morey Paper Mill Supply Co.
J. Hall, Warren Steam Pump Co.
H. Hall, Marble Nye Co.
W. H. Hall, Bauer Bros. Co.
Mr. and Mrs. F. B. Harlow, Penobscot Chemical Fibre Co.
Mr. and Mrs. J. D. Haskell, Dilts Machine Works
C. W. Hayden, Hayden Wire Works
Mr. and Mrs. D. F. Hayes, Lawless Bros.
J. D. Henderson, Fritz Pub.
W. L. Hilfrank, General Electric Co.
Mr. and Mrs. A. S. Hocker, Clays & Paper Research Corp.
A. L. Hobday, Southworth Co.
Mr. and Mrs. Fred Hodgemire, Hawthorne Paper Co.
P. B. Holden, Stowe-Woodward, Inc.
Mr. and Mrs. Roy Holden, Stowe-Woodward, Inc.
C. I. Horton, R. T. Vanderbilt Co.
Mr. and Mrs. O. F. Hutchinson, Bulkley Dunton Pulp Co.

I

Mr. and Mrs. P. C. Idell, The Babcock & Wilcox Co.
Mr. and Mrs. E. P. Ingalls, S. D. Warren Co.
Mr. and Mrs. T. H. Ireland, Crane Co.
Dr. and Mrs. Rudolf Illner, Clays & Paper Research Corp.

J

Wharton Jackson, Georgia Kaolin Co.
Walter Jehu, The Timken Roller Bearing Co.
E. D. Johnson
J. M. Johnston
Frederick S. Jones, Socony-Vacuum Co.
Mr. and Mrs. Hendry Duncan Jones, Manhattan Rubber Manufacturing Division
Mr. and Mrs. M. Jacobs, Chas. T. Main, Inc.
W. T. Jarvis, Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
T. L. Johnston, R. T. Vanderbilt Co.
C. B. Jones, Monsanto Chemical Co.
A. C. Junge, Clinton Co.

K

Mr. and Mrs. B. L. Kassing, Hammermill Paper Co.
Mr. and Mrs. Grover Keeth, Marathon Paper Mills Co.
William Alvin Kelly, E. D. Jones & Sons Co.
N. M. Kennedy, Penick & Ford, Ltd., Inc.
C. H. Kent, Hercules Powder Co., Inc.
J. E. Killinger, Penick & Ford, Ltd., Inc.
Mr. and Mrs. R. E. Kilty, A. E. Staley Manufacturing Co.
Mr. and Mrs. Harry C. Kinne, The Black-Clawson Co.
Mr. and Mrs. V. E. Kirby, Howland, Me.
F. E. Kneip, Nichols Engineering and Research Corp.
Mr. and Mrs. Robert F. Kohs, Detroit Sulphite Pulp and Paper Co.
H. W. Kugler, Taylor Instrument Cos.
R. W. Kumler, American Cyanamid & Chemical Corp.
B. Klugman, Grand Bag & Paper Co., Inc.
Dr. K. R. Karlson, Union Bag & Paper Corp.
Mr. and Mrs. D. M. Kelly, Bloomer Bros.
C. B. Kentnor, Jr., Michigan Steel Casting Co., Inc.
Mr. and Mrs. C. E. Kinney, Hercules Powder Co.
H. C. Kistler, Simonds Worden White Co.
C. M. Kopatch, Ciba Co.

L

L. J. Leborge, Maine Seaboard Paper Co.
W. E. Larkin, Corn Products Sales Co.
Mr. and Mrs. Benjamin T. Larrabee, Brown Co.
Mr. and Mrs. Stanley J. Leishmann, Ryegate Paper Co.
Herbert L. Lindenberg, Paper Mill News
P. M. Loddengaard, Bulkley, Dunton Pulp Co., Inc.
A. C. Loomis, Heller & Merz
Mr. and Mrs. Charles Ludwig, Mead Paper Corp.
Mr. and Mrs. A. G. Lyeth, Jr., The Babcock & Wilcox Co.
E. E. Lamb, Simonds Saw & Steel Co.
O. F. Lane, Krebs Pigment & Color Corp.
H. H. Latimer, Champion Paper & Fibre Co.
R. M. Lawton, Clark Wilcox Co.
F. H. Learned, Tyer Rubber Corp.
W. M. Leeson, Sandy Hill Iron & Brass Works.
R. M. Leighton, Stowe Woodward, Inc.
F. H. Leonard, Marble Nye Co.
H. S. Leonard, Monsanto Chemical Co.
P. M. Liner, Nat. Starch Products, Inc.
G. E. Lockwood, Lockwood Trade Journal Co., Inc.
A. A. Lowe, Sandy Hill Iron & Brass Works

M

R. G. Macdonald, Secretary-Treasurer, Technical Association of the Pulp and Paper Industry
Mr. and Mrs. K. J. Mackenzie, Eastman Kodak Co.
W. W. Macklem, Black-Clawson Co.
Mr. and Mrs. Ed. Monogue, United Paper Board Co.
Francis D. Martin, Lindsay Wire Weaving Co.
Benjamin J. Mayo, Imperial Paper & Color Corp.
Henry L. Mellen, Hercules Powder Co.
A. D. Merrill, Chemipulp Process, Inc.
W. K. Metcalfe, J. O. Ross Engineering Corp.
S. E. Meyers, Process Controls, Inc.
C. Michels, The Great Lakes Paper Co.
O. J. Mills, The Sandy Hill Iron & Brass Works
Walter B. Morehouse, National Oil Products Co.
Mr. and Mrs. E. E. Morris, Brown Co.
William G. Mueller, United States Rubber Co.
D. C. Murchison, Georgia Kaolin Co.
V. F. Murphy, Acme Steel Co.
Mr. and Mrs. John G. Murray, The Racquette River Paper Co.
G. W. MacDow, Norwood Pulp & Machine Co.
Mr. and Mrs. K. J. MacKenzie, Eastman Kodak Co.
Mr. and Mrs. F. J. Marstall, Westinghouse Electric & Mfg. Co.
Linda Marstall
Mr. and Mrs. M. J. Maguire, Hercules Powder Co.
R. Mannheim, Mathieson Alkali Works
Mr. and Mrs. G. R. Marsh, C. J. Merrill Co.
Mr. and Mrs. R. B. Martin, Wallace & Tiernan Co., Inc.
J. Martinson, Allis-Chalmers Co.
A. F. McConnell, Permutit Co.
McCarron, Stein Hall Co.
J. J. McDonald, Brown Co.
Mr. and Mrs. E. F. McGonagle
R. B. McKinney, Hercules Powder Co.
R. F. McNett, Bauer Bros. Co.
C. E. Merritt, Knox Woolen Co.
Mr. and Mrs. O. W. Messner, Robertson Paper Box Co., Inc.
H. H. Michelmore, The Foxboro Co.
L. R. Mitchell, John W. Bolton & Sons, Inc.
R. S. Murgatroyd, John W. Bolton & Sons, Inc.
C. B. Muzzy, E. D. Jones & Sons Co.
Mr. and Mrs. Maurice F. McCarthy and daughter, Hollingsworth & Whitney Co.
Mr. and Mrs. E. J. McDonnell, International Paper Co.
Miss Louise E. McGrath, Booth Chemical Co.
Smith McLandress, Appleton Wire Works, Inc.
Archibald McLintock, Texas Gulf Sulphur Co.

N

Bert R. Neice, New York Color and Chemical Co., Inc.
Mr. and Mrs. N. C. Neilson, C. J. Merrill, Inc.
John H. Noble, Improved Paper Machine Corp.
Mr. and Mrs. N. L. Nourse, Brown Co.
Albert A. Nyitray, Eastwood-Nealley Corp.
Mr. and Mrs. N. G. Niks, Munising Paper Co.
John L. Nolan, International Paper Co.
V. M. Norwood

O

Miss Florence M. O'Brien, Paper Mill News
Mr. and Mrs. J. A. O'Brien, Johns-Manville Corp.
J. J. O'Brien, Paper Mill News
F. W. O'Rourke, General Dyestuff Corp.
Mr. and Mrs. Wm. J. O'Brien, O'Brien Steam Specialty Co.
Roderick O'Donoghue, Roderick O'Donoghue
Mr. and Mrs. J. A. O'Brien
C. J. O'Neil, Johns-Manville Co.
George E. Osterheldt, Krebs Pigment and Color Corp.

P

F. S. Parks, American Wringer Co.
S. C. Partridge, The Timken Roller Bearing Co.
F. W. Partseh, J. O. Ross Engineering Corp.
C. K. Passmore, Walworth Co.
Clifford Patch, Eastern Corp.
Mr. and Mrs. Robert W. Pattison, American Writing Paper Corp.
Mr. and Mrs. George Pennock, The Bagley & Sewall Co.
G. A. Peterson, Rice, Barton & Fales, Inc.
Mr. and Mrs. E. Peterson, B. F. Goodrich Co.
G. M. Peterson, Cheney Bigelow Wire Works
David D. Piller, Holyoke Wire Cloth Co.
Mr. and Mrs. G. I. Pippin, Ingersoll-Rand Co.
J. E. Power, U. S. Rubber Co.
Mr. and Mrs. William Putney, Philadelphia Felt Co.
Charles E. Paige, Edwards & Walker Co.
F. W. Partsch, J. O. Ross Engineering Corp.
Mr. and Mrs. John B. Pendleton, Manhattan Rubber Manufacturing Div.
Mr. and Mrs. L. B. Penhallow, Wadhams Div., Socony-Vacuum Oil Co.
Mr. and Mrs. A. B. Perlick
A. L. Perry, Krebs Pigment and Color Corp.
B. M. Petrie, Eastern Mfg. Co.
M. W. Phelps, Solvay Process Co.
Mr. and Mrs. W. H. Pitkin
Mr. and Mrs. D. C. Porter
G. E. Price, National Adhesives
E. L. Puffer, Heller & Merz
Mr. and Mrs. W. G. Putney

Q

C. E. Quirk, N. Y. Color & Chemical Co.
R. J. Quinn, The Mathieson Alkali Works

R

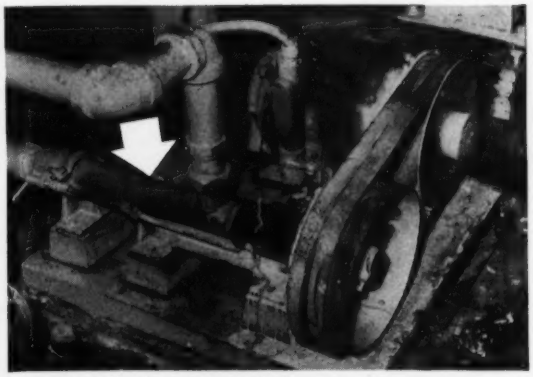
Mr. and Mrs. J. W. Raines, Lindsay Wire Weaving Co.
Mr. and Mrs. Herbert T. Randall, Champion Paper & Fibre Co.
F. M. Rhaten, B. F. Goodrich Co.
Frederick E. Rice, Frederick E. Rice Co.
Mr. and Mrs. George H. Rice, Kalamazoo Vegetable Parchment Co.
H. B. Richmond, Consolidated Water Power & Paper Co.
C. E. Robertson, The Noble & Wood Machine Co.
Frank Roberts, S. D. Warren Co.
Mr. and Mrs. Luther B. Rogers, Champion International Co.
Fay Harry Rosencrants, Combustion Engineering Co.
John Roslund, Asten-Hill Mfg. Co.
Mr. and Mrs. R. M. Radsch
J. Reno, Florida Red Cypress Co.
A. E. Regnier, Hercules Powder Co.
E. L. Richardson, General Electric Co.
Mr. and Mrs. H. M. Rice, E. I. du Pont de Nemours & Co., Inc.
W. I. Riker, Oliver United Filters, Inc.
C. E. Roberson, The Nobel and Wood Machine Co.
John R. Roberts, E. I. duPont deNemours & Co.
Mr. and Mrs. C. D. Rodgers
E. L. Root, Permutit Co.
Mr. and Mrs. E. M. Root, Dilts Machine Works
B. W. Rowland

S

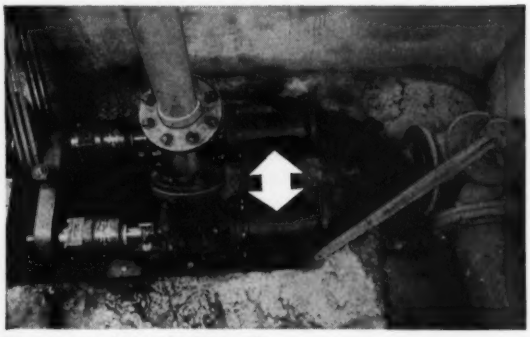
B. R. Sackett, SKF Industries, Inc.
Mr. and Mrs. J. Scheuermann, Cameron Machine Co.
Mr. and Mrs. J. Carl Schmidt, E. I. DuPont de Nemours & Co.
Mr. and Mrs. Norman B. Scott, Orr Felt & Blanket Co.
H. M. N. Shank, The Timken Roller Bearing Co.
J. Shaughnessy, American Wringer Co.
Mr. and Mrs. Charles M. Shipway, Wm. E. Hooper & Sons Co.
Mr. and Mrs. Peter S. Sinclair, The Sinclair Co.
Elic M. Sligh, Pairpoint Corp.
Charles P. Slocum, Corn Products Sales Co.
Frederick E. Smith, Hollingsworth & Vose Co.
Mr. and Mrs. Leon E. Smith, Downingtown Mfg. Co.
W. D. Somerville, Eastern Corporation
Stephen B. Stafford, Rice Barton Corp.
Mr. and Mrs. Oscar Stamets, Riegel Paper Corp.
Mr. and Mrs. Avery H. Stanton, Mason-Neilan Regulator Co.
Cornelius Stapley, Chemical Paper Mfg. Co.
Frederick L. Stapley, Crocker McElwain Co.
Ludwig Starck, H. & T. McCluskey & Sons, Inc.
Mr. and Mrs. R. E. Stearns, United Paperboard Co., Inc.
Clyde W. Stewart, Parker-Young Co.
Robert B. Stewark, Kalamazoo Vegetable Parchment Co.
T. L. Stirling, Hercules Powder Co.
J. P. Strasser, Stein Hall Mfg. Co.
Mr. and Mrs. Harry W. Stratton
W. D. Stroud, F. C. Huyck & Sons
Mr. and Mrs. Walter J. Sullivan, E. I. DuPont deNemours & Co.
Murel D. Summer, J. W. Penney & Sons Co.
Douglas Sutherland, Sutherland Refiner Corp.
Mr. and Mrs. Hugh Sutton, Bagley & Sewall Co.
Mildred L. Smith, A. E. Broughten Co.
G. A. Sawin, Jr., Westinghouse Electric and Manufacturing Co.
L. D. Schnabel, Fritz Publications, Inc.
J. F. Senuta, Fitchburg Paper Co.
W. Shields
Richard Sommer, Wilson Wire Works, Inc.
Cornelius Stapley, Chemical Paper Manufacturing Co.
Frederick L. Stapley, Crocker McElwain Co.
O. R. Steffens, Penick & Ford, Ltd., Inc.
R. R. Stoltz, Westinghouse Elec. & Mfg. Co.
R. J. Sprange
F. A. Strovink, American Cyanamid & Chem. Co., Inc.
P. B. Stull, Hercules Powder Co.
Glen Sutton

No Pumping Job too Tough—

FOR THE R & M MOYNO



Recently installed in new Texas plant.



Doing double duty in an Ohio mill.

Under grueling working conditions . . . in leading paper mills everywhere, R & M Moyno pumps are performing difficult pumping jobs . . . giving trouble-free service . . . reducing costs . . . improving finished product quality.

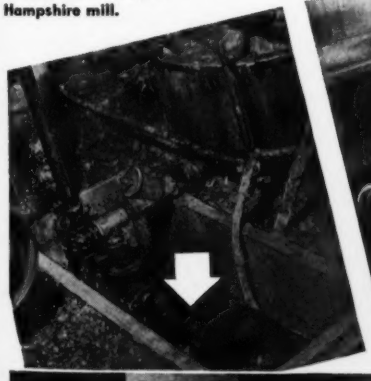
The R & M Moyno is the proved, profitable answer to *your* pumping problems. It is valveless, self priming, positive in displacement . . . handles coating solutions up to 53% solids, delivering a uniform discharge at constant pressure without agitation or cavitation.

Investigate the R & M Moyno pump today. An R & M field expert will analyze your pumping problems without obligation . . . and may help you save thousands of dollars. Write now for R & M Pump Folder No. 1777.

Saving time and money in leading Maine mill.

It's an R & M Moyno in Wisconsin, too.

Installation in a New Hampshire mill.



Another satisfied R & M Moyno user in Maryland.

ROBBINS & MYERS, Inc.

MOYNO PUMP DIVISION **SPRINGFIELD, OHIO**

HOISTS • CRANES • MOTORS • FANS • FOUNDED 1878

T

W. F. Taylor, Allis-Chalmers Mfg. Co.
Benjamin E. Teale, Crane & Co., Inc.
Mr. and Mrs. K. E. Terry, S. D. Warren Co.
Mr. and Mrs. E. L. Tewksbury, Stowe-Woodward, Inc.
S. S. Theil, Ansbacher-Siegle Corp.
Dr. Philip Thomas, Westinghouse Electric & Mfg. Co.
Dewey Thomas
Andrew Thompson, Hewitt Rubber Corp.
William O. Thompson, Krebs Pigment & Color Corp.
Mr. and Mrs. F. P. Thornton, Stowe-Woodward, Inc.
R. Tobin, Pond's Extract Co.
Mr. and Mrs. Tourongeau, Wausau Paper Mills
O. S. True, U. S. Rubber Co.
B. A. Taylor, James H. Taylor Co.
P. Talbot
P. Talbot, Jr.
E. J. Thom
Dr. Thomas, Westinghouse Elec. & Mfg. Co.
G. A. Thompson, B. F. Perkins & Son, Inc.
Andrew Thompson, Hewitt Rubber Corp.
Mr. and Mrs. L. A. Thompson, Hercules Powder Co.
Mr. and Mrs. Andrew F. Tolland, Oxford Paper Co.
Mr. and Mrs. Richard Tutt, Jr., Peter Cooper Corp.

U

Richard M. Upright, Dow Chemical Co.
R. Upright

V

A. B. Vincent, Socony-Vacuum Co.
Mr. and Mrs. G. W. Verow, Brightwater Paper Co.

W

Mr. and Mrs. D. J. Walsh, Parker-Young Co.
Mr. and Mrs. Joseph A. Waters, American Wringer Co.
Mr. and Mrs. Norman S. Weil, W. S. Tyler Co.
Mr. and Mrs. Lewis E. Weiser, National Folding Box Co.
Mr. and Mrs. Arnold J. Weller, Sutherland Paper Co.
Henry E. Weston, Fritz Publications, Inc.
Washburn Weston, American Wringer Co.
Mr. and Mrs. P. J. White, Great Eastern Packing & Paper Stock Corp.
Almeron William Wickham, MacAndrews & Forbes Co.
Mr. and Mrs. William Willets, Titanium Pigment Corp.
Lawson Williams, E. P. Lawson Co.
A. B. Williams, American Wringer Co.
H. H. Williams, E. D. Jones Co.
Mr. and Mrs. Robert M. Wishart, Oxford Paper Co.
Mr. and Mrs. J. F. Wright, National Aniline & Chemical Co.
Mr. and Mrs. G. R. Wyman, Socony-Vacuum Co.
H. J. Waldron, National Oil Products Co.
Mr. and Mrs. G. Clifton Walton, Downingtown Mfg. Co.
Mr. and Mrs. N. P. Wardwell, Carthage Machine
C. R. Westaway, Ingersoll-Rand
W. O. Wheeler
Mr. and Mrs. M. M. Whitman
R. Cameron Whitney, Morningstar, Nicol, Inc.
B. L. Whittier, Mt. Vernon-Woodbury Mills, Inc.
G. S. Witham, Sandy Hill Iron & Brass Wks.
H. H. Williams
Mr. and Mrs. W. F. Wolfe, MacSim Bar Paper Co.

Z

H. C. Zeni, American Cyanamid & Chem. Corp.
E. W. Zimmerman, Chesapeake Corp.

Deliveries of Paper In Midwest Difficult

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 23, 1941—The Chicago paper market continued its upward advance during the week with local sales offices reporting increased difficulties in making deliveries. With newsprints coming out with a very steady report, waste papers strong in the upper range of last week and with current indications that bonds of the better grade are in for an upward revision, the market in all departments is swinging into high gear.

Reports indicate that mills are sufficiently far behind to not permit deliveries until early September and this range is widening daily as demand continues. The advance is as orderly as local paper executives can make it and the efforts at self-regulation are commendable to a marked degree. Krafts, bonds, books, covers, groundwoods, waste papers and specialty lines are all in the same category.

Prepare New Sales Tax Brackets

When Illinois reverts to a 2% sales tax on July 1 instead of the current 3% tax, consumers will pay the tax on a new bracket schedule which the merchants of Illinois hope will be uniform. The new schedule is of particular interest to paper merchants selling at retail. Adding the tax as a separate item of expense due to the Retailers Occupation Tax, merchants will add one cent at fifteen cents; two cents at 66 cents; 3 cents at $1.24 and so on up. This arrangement is agreed upon by the retail trade of the State which must make the effort at uniformity entirely without the help or encouragement of the State because of the fact that the Illinois tax is not a "sales tax" but a tax on occupations.

After July 1, Illinois taxpapers will also pay the sales tax on a basis of 2% of 98% of the gross receipts instead of the old 3% of 100% of the gross receipts as in the past. The new amendment to the R.O.T. act comes through passage of S.B.113 which eliminates the former "tax on the tax" and will save retail occupation tax payers approximately $3,000,000 annually. The paper industry in Illinois will come in for its share of the savings.

Propose New Houston to Chicago Rate

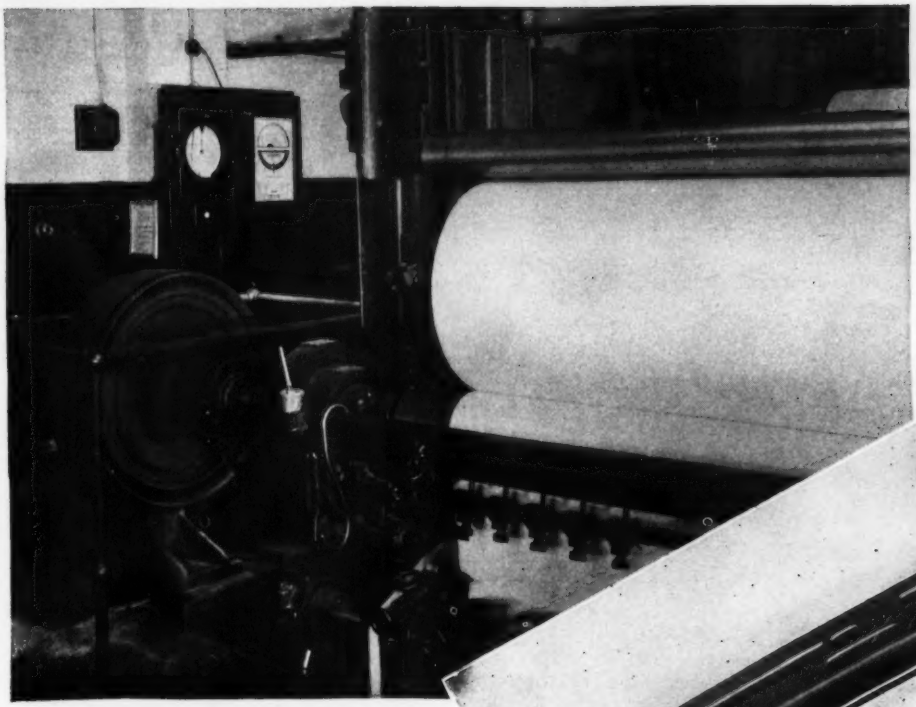
Southwestern rail lines, originally proposing to make a rate of 34 cents a 100 pounds from Houston to Chicago on printing paper other than newsprint, have now approved a rate of 37½ cents a 100 pounds subject to fourth section at both origin and destination and to be inapplicable in combination with other rates. Conferences will be held on these proposed rates. It is understood that competitive paper producing groups regard the 37½ cent rate as objectionable as the earlier proposed 34 cent rate are preparing to register opposition. The competitive paper making centers contend that the Houston paper mill is supplying only two-thirds of its 30,000 ton annual output to a national publishing organization and that consequently 10,000 tons will remain for distribution in the Chicago market at the favorable fourth section rate to the disadvantage of rival paper producers located elsewhere. Rival paper makers state that the rail rate on paper from Chicago to Houston of 86 cents is not unreasonably high considering a road haul of 1,034 miles while, on the other hand, the proposed rate of 37½ cents from Houston to Chicago would yield less than seven mills per ton mile.

Truck Legislation to Increase Size

Bills to increase the maximum legal lengths of trucks and of tractor and semi-trailer combinations to 40 feet from 35 feet were advanced to third reading—passage stage—in the Illinois Senate this week. The two, part of a series of truck regulation measures, also would make maximum axle load 18,000 instead of 16,000 pounds. These increases would not increase license fees which are based upon gross weight.

Salesmen Hold Second Outing

The western division of the Salesmens Association of the Paper Industry held its second annual golf outing of the year on Friday, June 20 at the Park Ridge Country Club. Advance registrations and interest growing out of the initial outing at Sunset Ridge were expected to swell the attendance and a splendid run of weather added to the enjoyment. Ed Rolaine of the Mosinee Paper Mills, is chairman of the golf committee.



Verigraph Moisture Control installations like this result in better finish, uniform caliper, higher strength and bulk, and definite steam savings.

Verigraph Hygrometer with easily removable moisture element senses variations as small as 1/10 of 1%.

Producing Results that *"Couldn't Be Done"!*

Time and again, pulp and paper mills encounter process control problems that can't be solved by previously-known methods of instrumentation. In the past 30 years, Foxboro has set a unique record of solving such problems . . . has conquered many "impossible" tasks!

The reason is, that Foxboro Instrumentation is *creative* instrumentation, designed by men who *know* paper making. Long practical experience enables them to develop, not only standard instruments of greater accuracy, and better application methods . . . but also, entirely new instruments for special tasks.

A typical example is the Verigraph Moisture Controller. Until Foxboro engineers originated this instrument, no method was available for continuously measuring moisture in moving paper and automatically regulating steam to dryers. Now, Verigraph Systems measure moisture to within 1/10 of 1%...permit you to run paper at higher moisture levels without danger of under- or over-drying!

Write for Bulletin 212-2 on Verigraph Moisture Control or details of Foxboro Instrumentation for other operations. **The Foxboro Company, 114 Neponset Ave., Foxboro, Mass., U.S.A.** Branches in principal cities of United States and Canada.

FOXBORO

REG. U. S. PAT. OFF.

Creative Instrumentation

Kimberly-Clark Order Wadding Machine

High-Speed 128-Inch Deckle Crepe Wadding Machine On Order Will Be Installed In Recently Constructed Badger-Globe Mill At Neenah, Wis. — U. S. Paper Mill Increases Wages — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 23, 1941—Kimberly-Clark Corporation, Neenah, Wis., has placed orders for a new 128-inch deckle crepe wadding machine to occupy pre-arranged space in its recently constructed Badger-Globe mill at Neenah. Anticipated delays in securing shipment of parts probably will mean that it will not be placed in operation until March, 1942.

The machine will be used to manufacture the company's new product, Kimsul, a coarse wadding used for insulation of homes, automobiles and refrigerators. It will closely resemble the first large, high-speed machine installed in the new building and placed in operation last January.

Provision Made For Second Machine

When the new three-story building was constructed, provision was made for a second machine, but installation was deferred until a market was built up for Kimsul. The demand has proved entirely satisfactory, necessitating an early increase in production. Approximately 80 additional workers will be employed under the expansion program.

John Rhamstine Heads Hummel & Downing Co.

Announcement was made June 14 that John R. Rhamstine of the Corn Products Refining Company, New York, has been elected president of Hummel and Downing Company, Milwaukee, paper board and container manufacturers. He succeeds Arthur Ratcliff, who resigned the presidency to become chairman of the board.

Ratcliff's move to the board chairmanship follows the recent resignation from that post of Morris Sayre, also executive vice-president of the Corn Products Refining Company. It was announced that the latter resignation was made imperative through the multitude of duties Sayre incurred through his dual connections in New York and Milwaukee.

In addition to Mr. Rhamstine, two new directors have been added to the Hummel and Downing board, increasing that body from five to seven members. The additions are Randall A. Ross and Albert S. Etheridge, both of Milwaukee.

Rhinelander Gives All Workers Vacation

Rhinelander Paper Company, Rhinelander, Wis., will stop operations for one week beginning Thursday, July 3 to permit all employees to have a vacation with pay. Only maintenance crews will work during the shutdown, making necessary repairs to machinery.

New Reservoir Brings Law Suit

An aftermath of the construction of the vast storage reservoir on the Big Eau Pleine River by the Wisconsin Valley Improvement Company, Wausau, Wis., is a damage suit brought against the company by Charles E. Duck for $10,500. The plaintiff claims his farm is made inaccessible from time to time because of floods when water is released from the reservoir. The case is on trial in the circuit court at Wausau, and the jury made a tour of the presises last week. M. W. Kyler, manager of the Improvement company, testified as to the water released. The company contends the farm was damaged annually by flood waters before the dam was constructed, and that the uniform flow of water established in 1936 has increased the value of Mr. Duck's 200 acres.

U. S. Paper Mills Increases Wages

Employees of the U. S. Paper Mills, De Pere, Wis., have been granted a wage increase of 10%, according to announcement of Walter Cloud, manager. All workers who have been employed at the mill one year are to receive a week's vacation with pay.

Combined Locks Co. Honors Employees

Eight employees of the Combined Locks Paper Company, Combined Locks, Wis., who have retired within the last fifteen months were honored at a dinner dance Sunday evening, June 15 at the Nitingale ballroom, Kaukauna, Wis. They were all veterans in mill service. Among them was John Wydeven, who has been with the company 52 years but is not retiring. The others were Charles H. Thor, Melvin Burkart, William Jansen, George Hartjes, Sr., Gustave Hintz, Mike Miller, John Hoebe and Joseph Wildenberg. About 500 persons attended the party, at which the honored workers were congratulated by G. D. Muggleton, general manager.

S. F. Shattuck Launches New Cruiser

S. F. Shattuck, vice-president of Kimberly-Clark Corporation, Neenah, Wis., a boating enthusiast for many years, has purchased a new electrically welded steel cabin cruiser. It was launched last week at the yards of the Burger Boat Company, Manitowoc, Wis. The cruiser is 65 feet long, with a 16-foot beam and 4-foot draft and has all modern appointments, including a special electric light plant, radio direction finder and ship-to-shore telephone. It is powered with twin Diesel engines. Mr. Shattuck will use the craft for cruising on Lake Winnebago, the Fox River and the Great Lakes.

Cannard Co. Incorporates

Articles of incorporation have been filed by the Cannard Company, Little Chute, Wis., manufacturers of converting machinery. Capital stock consists of 1,000 shares at no par value and 250 shares of preferred stock at $100 value per share. The articles are signed by Carl F. Holmeier, F. E. Jenkins and Genevieve Williams. The company recently moved from Green Bay, Wis., to a new factory building erected at Little Chute.

Sage-Fannon Engagement Announced

The engagement was announced last week of Robert S. Sage of Neenah, Wis., son of Mr. and Mrs. Charles H. Sage, and Miss Mary Fannon of Appleton, Wis. The wedding will take place July 10. Mr. Sage is employed at Neenah by the Kimberly-Clark Corporation, of which his father is vice-president.

Falk Corp. Changes

[FROM OUR REGULAR CORRESPONDENT]

The Falk Corporation, manufacturers of speed reducers, flexible couplings and other transmission machinery, announces the appointment of W. L. Schneider to the position of vice president of sales, T. F. Scannell to sales manager and J. B. Kelley to assistant sales manager.

Mr. Schneider was a graduate from Marquette University in 1925 and started at the Falk Corporation as a Sales Estimator. He has held successive positions as a sales engineer, assistant sales manager and sales manager. He is active in the work of the American Gear Manufacturers Association, formerly as chairman of the Speed Reducer Committee, and, at the present, as Chairman of the General Commercial Committee. He is a member of the American Society of Naval Engineers and a member of the American Society of Naval Architects and Marine Engineers.

Mr. Schneider, while fulfilling his new duties as a vice president of the Falk Corporation, will continue in the supervisory capacity as director of sales.

Mr. Scannell, who succeeds Mr. Schneider as sales manager, will be responsible for the active sales of all Falk products except those under the jurisdiction of the foundry division.

He is a Yale University graduate in the class of 1918. During the World War he served as an ensign in the U. S. Navy. He spent some time with the Chain Belt Company and joined the Falk Corporation in 1928 as St. Louis representative, later becoming district manager of the southwest territory. Since April, 1940, he has been assistant to the sales manager in Milwaukee.

Mr. Scannell has also been active in the work of the American Gear Manufacturers Association.

Mr. Kelley was a graduate of Marquette University in 1927. Since that time he has been with the Falk Corporation first as an apprentice and later as an estimator, salesman, and district manager in Cincinnati, Ohio. In recent years he has been in charge of the Falk Corporation's flexible coupling business. Mr. Kelley has been closely identified with the activities of a number of local professional and honorary fraternal organizations, and with several national engineering societies.

46 MANHATTAN Rubber Covered Rolls on this machine—typical of many Manhattan installations on new equipment

MANHATTAN Rubber Covered Rolls

Aid Production—Reduce Costs

Accurate grinding and uniform density of MANHATTAN Rubber Covered Rolls, the result of painstaking labor by highly skilled workmen, assure you of steady, smooth delivery from wet end; uniform lay of paper on felt; perfect nip and freedom from pick-up.

More and more paper mills are installing MANHATTAN Rolls for better quality paper produced at higher speeds and lower costs.

If you want to increase production and at the same time reduce maintenance and replacement costs . . . let MANHATTAN'S engineers, backed by nearly 50 years' experience in manufacturing paper rolls, make specific recommendations for rubber covering your Press, Couch, Felt, Table, Suction Press or Extractor Rolls.

Factories: Passaic, N. J. Neenah, Wis. North Charleston, S. C.

Keep Ahead with

THE MANHATTAN RUBBER MFG. DIVISION

OF RAYBESTOS-MANHATTAN, INC.

58 Townsend Street, Passaic, N. J.

Britain Makes New Filtering Paper

New types of filtering paper are now being made in Great Britain from pure cotton rags to take the place of similar products formerly obtained from the continent.

Large quantities of it are being shipped to Empire countries, Egypt, Palestine, China, the Dutch East Indies, the United States, Iceland and Portugal.

Much of this is new territory and the demand for the paper, which has increased by at least 50%, comes from many industries, especially varnish manufacture, oil refining, gold mining, the electrical trades, and by brewers, chemists and druggists.

Britain Estimates Its Newsprint Needs

United Kingdom Will Require 160,000 Tons of Imported Newsprint Annually — Non-Profit Company Will Handle Newsprint Supply—Equitable Distribution Planned for All Publishers.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 23, 1941—United Kingdom newspapers will require 160,000 tons of newsprint from abroad annually, according to present arrangements whereby consumption has been cut to 5,000 tons weekly, to maintain an adequate reserve of 100,000 tons.

Newsprint Supply Company, a non-profit British organization, is entrusted with the task of handling all newsprint supplies during the European conflict for more than 1,000 daily and weekly newspapers in the British Isles and seeing that available supplies are distributed equitably and continually. The organization handles about 40 million pounds sterling worth of newsprint annually for 40 million readers of United Kingdom newspapers, according to the World Press News.

Distributing Agency Formed in 1940

The company was formed early in 1940 by the principal leaders in the industry. When the conflict began, newsprint imports were handled by the Government through the Director of Newsprint in the Paper Control, but events made it evident that a new policy would have to be instituted to safeguard the flow of newsprint supplies to the embattled Island.

Imports of raw materials from the Scandinavias had been erratic, and it was becoming clear that a newsprint reserve was necessary. When Norway was eliminated as a supplier in April, 1940, essential raw materials were cut off from the United Kingdom mills, but even before that, it had become evident that some far-reaching measures would have to be taken. Dependency upon home production was becoming precarious.

Four Principles Enunciated

On March 22 Lord Beaverbrook, Lord Kemsley and Lord Camrose discussed the situation and enunciated four principles:

(1) Equalization of price of home and imported newsprint.

(2) Import of Canadian and Newfoundland paper to be a fixed percentage.

(3) Provision for a war reserve of 100,000 tons of newsprint, to be available to every newspaper wanting to participate in the scheme.

(4) Provision for assistance in securing raw materials for home mills.

This arrangement was signed by all London interests and accepted by the Newspaper Society and the Scottish Daily Newspaper Society.

Negotiations were started with the Ministry of Supply to implement the agreement. By this time it was evident that supplies of newsprint would have to be obtained from Canada and Newfoundland.

As a result of negotiations the Newsprint Supply Co. was formed to undertake the importing of newsprint and supervision of distribution to members and all newspapers.

Company Divided Into Three Sections

The company is divided into three sections: 1, a board of directors; 2, a rationing committee, and 3, a working organization.

Some losses were incurred through the agreement by the major units, such as the Daily Mail, Daily Express, News of the World, News Chronicle, and other organizations favorably situated in regard to stocks and contracts. These were turned over to the Newsprint Supply Co. pool.

Through these stocks and contracts it has been possible to maintain continuity of supply and keep prices to unusual low wartime levels. Price has been held at 26 pounds a ton. It could be sold at 24 pounds a ton, but to equalize costs for imported and higher-priced home manufactured newsprint, a flat price of 26 pounds a ton was established. Without this voluntary co-operation the price of newsprint would have gone to much higher levels.

As conditions are, stocks of newsprint have been fairly well maintained. Early in May they were estimated at 175,000 tons as compared with 250,000 tons a year previously.

Britain Deeply Cuts Consumption

Newsprint consumption in Britain has been cut to 5,000 tons a week, or 260,000 tons on an annual basis. Domestic production is about 100,000 tons annually. Therefore, if undue drawing on reserves is to be avoided, 160,000 tons will have to be imported annually.

The company has its own fleet of seven ships with a carrying capacity of 30,000 tons each voyage. Four or five voyages may be made by each annually. Annual carrying capacity of this fleet therefore is approximately 120,000 tons.

Plan Equitable Distribution to Publishers

To distribute paper equitably newspapers are divided into three main groups:

(1) National and provincial daily and evening papers, consuming about 75% of the weekly 5,000 tons.

(2) Provincial weeklies of the active group of 420 papers, using the major portion of the balance.

(3) Between 500 and 600 smaller papers which together require only 60 tons of newsprint weekly.

An exact ration has been worked out on the basis of weekly consumption of 5,000 tons. A system of determining the consumption figure allocated to each newspaper was evolved. Domestic mills supply the 500 to 600 smaller users and Newsprint Supply Co. takes care of the 420 active users from imports.

The British market is divided into three zones to facilitate shipping. These arrangements are elastic because of shipping uncertainties.

The fact that not one British newspaper, because of lack of newsprint, has failed to appear since the company started operations, testifies to the efficiency with which the scheme works.

Prices and Priorities

The current issue of the *Bulletin* issued weekly by the Eastern Division of the Salesman's Association of the Paper Industry, E. O. Merchant, secretary, 122 East 42nd street, New York, summarizes the talk of E. W. Tinker, secretary of the American Paper and Pulp Association, who was a guest speaker at a recent Salesman's luncheon. Mr. Tinker discussed three subjects of particular interest to the industry:

Price Control by OPACS. Mr. Tinker stated that while the Price Administrator had tacitly recognized the need for certain price readjustments in the Paper Industry, if any unreasonable increases are made a price ceiling will most certainly be established —and it will be predated as the OPACS sees fit.

OPM's Curtailment of chlorine consumption by the pulp and paper industry. Chlorine production, as reported by Mr. Tinker, was being held down by a shortage of electric power while the Munitions Board in Washington was increasing its requirements, and the British were taking larger quantities. In addition, a transportation problem is involved, since the heaviest production of chlorine is on the Pacific Coast. A 10% cut in Industry consumption has been requested by the OPM, and this, according to Mr. Tinker, is only the beginning; sooner or later a 30% cut may be ordered. The 10% cut will only reduce brightness by 4 or 5 points, but a 30% cut would have a more serious effect. Negotiations have been started with the Government Printing Office and other Government Purchasing Agencies to change their brightness specifications, and they have displayed a highly cooperative attitude.

Priorities. Mr. Tinker pointed out that the American Paper and Pulp Association has established an office in Washington in charge of Mr. Ritchie, and this office has been engaged chiefly in helping the mills secure priority ratings on repair and replacement materials. In this connection he advised that it was easier to secure such ratings for mills working on government orders than for those who did not.

The OPM has just requested the paper industry to discontinue the use of Tapioca for sizing. This was done to conserve shipping space. Formaldehyde is also becoming scarce.

Mr. Tinker emphasized the importance of industry cooperation with the government agencies. Should these agencies encounter resistance in any industry, they may find it expedient to assume control. If this is done, the government will say who gets the paper, and how much.

Freer-Flowing Mixes At Higher Total Solids— with

COATING STARCH "C"

This is an exceptionally thin chlorinated starch which will yield clear, stable, free mixes without causing those appreciable reductions in pick tests usually associated with thin mixes.

NATIONAL STARCH PRODUCTS INC.

820 GREENWICH ST., NEW YORK

CHICAGO — PHILADELPHIA — BOSTON — SAN FRANCISCO
AND ALL PRINCIPAL CITIES

A New Waldorf Tissue

[FROM OUR REGULAR CORRESPONDENT]

CHESTER, Pa., June 23, 1941—The Scott Paper Company has announced to the trade as of June 15 in leading popular magazines and in the *American Weekly*, the new "Luxury Texture" Waldorf Tissue. The Waldorf Tissue has been on the market for 35 years, and in the operation of the two new pulp mills of the company was found a means of producing softer sheets, which are of a much finer texture than that in the sheets previously made.

Canada Appoints New Timber Controller

Allan S. Nicholson, Who Has Served As Assistant, Now Succeeds Loren L. Brown As Timber Controller of Canada—South Africa Increases Its Purchase of Canadian and Newfoundland Newsprint.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 23, 1941—Loren L. Brown, who as Timber Controller for Canada, has been largely responsible for the rapid progress of Canada's vast defense building program, has resigned in order to return to his duties as vice-president and director of the Dominion Tar and Chemical Company, Montreal. As his successor Allan S. Nicholson, who since July, 1940. has been Deputy Timber Controller, has been appointed.

New Controller An Experienced Man

Mr. Nicholson is a native of Wentworth County, Ontario. He started his own business as a young man in Crow's Nest Pass, B. C., and has always been identified with the Canadian lumber industry.

He is vice-president of the Crow's Nest Pass Lumber Company, Limited; president of A. S. Nicholson and Sons Limited, Burlington, Ont.; and senior partner of the firm of Nicholson and Cates, Toronto.

When Mr. Nicholson was called to Ottawa last July as assistant to the Timber Controller, he was placed in charge of lumber and millwork buying for the Government, in which capacity he has performed an outstanding service.

Mr. Brown was the second timber controller since the start of the European conflict. H. L. MacMillan of Vancouver, was first appointed to the post, but later resigned to become chairman of the Wartime Requirements Board and now is head of the Government-owned company building cargo ships.

Canadian Newsprint in South Africa

The Canadian Trade Commissioner in Cape Town, South Africa, J. C. Macgillivray, reports that during 1940 the Union of South Africa increased its purchases of newsprint in rolls from Canada, its leading supplier, with imports of 599,240 centals (100 pounds) as compared with 533,537 centals in 1939. The value of the imports from Canada showed an even greater increase, rising from £267,905 in 1939 to £355,858. For 1938 the figures were 413,618 centals and £206,768, so that the increase over two years has been decidedly substantial. The position of Canada as a supplier of flat newsprint has improved even more sharply, South Africa's purchases from this country rising from 9,790 centals valued at £5,741 in 1939 to 30,507 centals valued at £21,785.

Prior to the European conflict the United Kingdom occupied in some years a fairly close second place to Canada as a supplier of newsprint to South Africa, while there were also small secondary imports from such countries as Sweden and Finland. During 1940, however, the United Kingdom ceased to be a competitor of Canada, being replaced by Newfoundland. Imports from the latter country, unrepresented in 1938, rose from 20,503 centals in 1939 to 185,298 centals last year. Imports from the United Kingdom, it may be noted, were 308,684 centals in 1938, 127,735 centals in 1939 and only 7,493 centals in 1940. Approximately 72% of the volume of all imports last year were from Canada and 22% from Newfoundland.

Visit Strathmore Mill

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 23, 1941—On invitation of the Strathmore Paper Company of West Springfield, Mass., members of the Boston Club of Printing House Craftsmen, Inc., visited the mill of the company at Woronoco and were guests of the Strathmore at luncheon at the Woronoco Inn on June 14.

The party, numbering 34, left the Hotel Brunswick in a special bus at 8:30 o'clock. On arrival at the mill about noon, they were conducted through the plant, in which all departments were in operation except the sorting room and the finishing room. The operation in paper making in one of the leading paper mills of the country was most interesting and instructive.

At the luncheon, John D. Zink, vice-president in charge of sales, spoke on the effect of the defense program on the paper industry. He said that he would not advise printers to buy stock on speculation nor to anticipate any great shortage, but to buy in advance if they could foresee their needs. Val Gooding, in charge of the technical department, and E. Hughes, of the sales department, also spoke.

After the luncheon, the party returned to Boston, reaching the city about 8:30 o'clock, having greatly enjoyed the occasion.

Among those who went were President Joseph F. Holmes, Second Vice-President Carl A. Nelson, Secretary-Treasurer Fred A. Williams, and Patrick J. Smith, chairman of the education committee.

Sorg Paper Co. Offer Cash Prizes

$200 in cash is offered by the Sorg Paper Company, Middletown, Ohio, to printing houses, during the coming year for prize-winning books, booklets, broadsides, letterheads, menus, post cards, tags, maps, business forms or any other type or kind of material printed or lithographed on any Sorg paper.

Awards will be made semi-annually, covering the six months periods ending respectively, July 1, 1941, and January 1, 1942. All entries for the first half-year's contest must be in our hands by July 1, 1941. Cash awards will be dispatched to firm heads, to be distributed as they may see fit.

Prizes are $75.00, each period, to the winning entry. An additional $25.00, each period, will be awarded to the paper house representative who supplied the winner's paper requirements. The name of the representative from whom the Sorg paper used was purchased must be included when the entry is forwarded for judging.

John M. Richardson Dead

John M. Richardson, chairman of the board of directors of the Richardson Co., Lockland, Ohio, died June 12, concluding a career of almost a half century in the city's manufacturing industry.

Critically ill for the past two weeks, he died in his home, 992 Marion avenue, Cincinnati, Ohio. He had observed his sixty-first birthday Memorial Day.

A native of Glendale, O., Richardson was the son of the late J. C. Richardson, who, with Thomas J. Haldeman, founded the company bearing his name 75 years ago.

Eighteen months ago, Mr. Richardson resigned his position as president of the firm to become chairman of the board of directors. He also held a similar position with the Gardner-Richardson Co. of Lockland and Middletown, O., and was a member of the board of directors of the Central Trust Company and Carthage Mills, Inc.

Two of his brothers, W. H. and Paul Richardson, are vice-president and secretary-treasurer, respectively of the Richardson Co. Another Brother, T. H. Richardson is retired. He also leaves his widow, Mrs. Martha Breneman Richardson; a daughter, Eunice Swift Richardson, and a son, John Moore Richardson, Jr., assistant treasurer of the firm, in addition to two sisters, Mrs. F. O. Loveland and Miss Angie Richardson, both of Glendale.

Mr. Richardson became affiliated with the company, which has branches in Melrose Park, Ill., Indianapolis, Ind., and New Brunswick, N. J., 44 years ago and held virtually every position in the firm before succeeding his older brother, Charles C. Richardson, as president in 1915. He was a member of the Queen City Club, Maketewah Country Club and the Cincinnati Country Club.

Lyddon & Co. in New York

In 1940 Lyddon & Co. (America) Inc. was incorporated as a subsidiary of Lyddon & Co., Ltd., of London, England. The parent company has long represented in Great Britain many of the leading American pulp mills, particularly the West Coast mills.

Considerable tonnages of pulp have been imported by Lyddon & Co., Ltd., into Great Britain prior to the war.

Since a large part of their business consisted also in exporting pulp to South America, the American company was formed to continue these operations by preserving a close contact with United States producers.

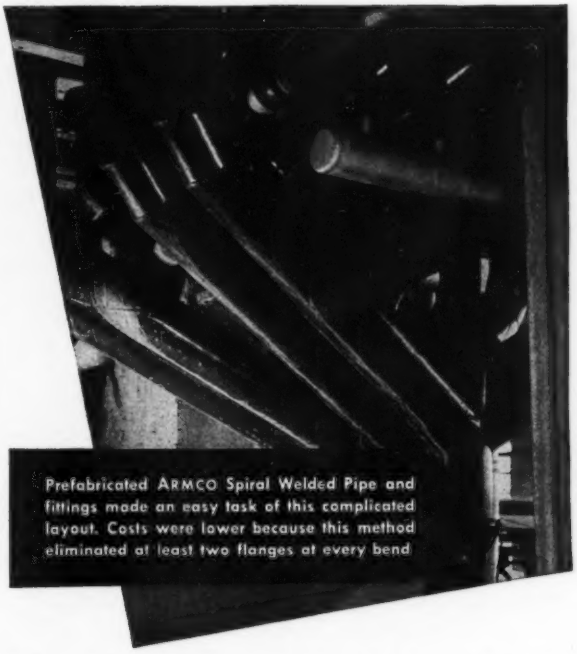
The New York office of Lyddon & Co., (America) Inc., is located at 51 East 42nd street.

Bedford Pulp Raises Wages

BEDFORD, Va., June 23, 1941 — An increase in wages for all union members employed by the Bedford Pulp and Paper Company at Big Island has been reported by C.I.O. representatives following a recent conference between officials of the paper company and C.I.O. members.

A raise of 4% for unskilled workers is reported, a 6½% increase for semi-skilled workers, and 9% jump for skilled workers. This is the second raise of this nature during this year, it was said.

in a **tight spot** *with Plenty of Room!*



Prefabricated ARMCO Spiral Welded Pipe and fittings made an easy task of this complicated layout. Costs were lower because this method eliminated at least two flanges at every bend.

When close quarters complicate piping layouts here is a ready answer. Just use ARMCO Spiral Welded Pipe. It goes in slick as a whistle and saves time, trouble and money.

ARMCO Spiral Welded Pipe is custom-built to fit each job. Tees, wyes, elbows are made to measure and welded to straight pipe runs. This eliminates a pair of flanges at every bend, conserves space and simplifies installation.

Besides saving hours of tedious assembly, ARMCO "Spiral Welded" brings assurance of trouble-free service. Fewer flanges mean fewer joints, less chance for leaks. What's more, ARMCO Pipe has no threads to invite corrosion.

Let us show you how economical it is to have ARMCO Spiral Welded Pipe tailor-made for that next job. Diameters range from 6 to 36 inches, wall thicknesses from 7/64 to ½-inch. Send us your plans; we'll gladly submit cost estimates and a sketch of our proposed design. The American Rolling Mill Company, Pipe Sales Division, 1991 Curtis Street, Middletown, Ohio.

ARMCO

Armco

SPIRAL WELDED PIPE

CONSTRUCTION NEWS

Wisconsin Rapids, Wis.—Consolidated Water Power and Paper Company, Wisconsin Rapids, has approved plans for new addition to local mill, consisting of a one-story structure, about 72 x 85 feet, to be used for storage and distributing service. A crane will be installed. No estimate of cost has been announced. Erection will be carried out with company forces. Thomas Utegaard is company engineer, in charge.

Charleston, W. Va.—The Central Ohio Paper Company, 226 North Fifth street, Columbus, Ohio, building and roofing papers, and other paper stocks, has approved plans for new branch at Charleston, to be one-story, on site at 1541 Hansford street. New structure will provide extensive storage and distributing facilities, and is estimated to cost about $35,000, with equipment. General erection contract has been awarded to E. L. Harris & Son Company, Charleston, and work is scheduled to begin at once. C. A. Haviland, Virginia Land Bank Building, Charleston, is architect.

Detroit, Mich.—The Detroit Sulphite Pulp and Paper Company, 9125 West Jefferson avenue, has begun erection of new addition to mill, recently referred to in these columns, and will push work to early completion. It will be one-story and provide for considerable increase in present capacity. The W. J. C. Kaufmann Company, 10610 Shoemaker street, Detroit, is general contractor for construction.

Perth Amboy, N. J.—The Philip Carey Manufacturing Company, Cincinnati, Ohio, manufacturer of asbestos paper board products, roofing papers, insulating papers, etc., has arranged for purchase of former plant of Pardee Tile Works, Inc., South street, Perth Amboy, fronting on the Raritan River and adjacent to the Victory Bridge over that stream. Plant consists of a group of one and two-story buildings, totaling about 200,000 square feet of floor space, on seven-acre tract of land, and will be used for a new Eastern manufacturing plant. Company also has purchased another seven-acre tract of adjoining land, heretofore held by the city, for future expansion. Machinery now in the plant will be disposed of at early date, and Carey company will begin work in about 60 days on modernizing and improving buildings, with installation of machinery and equipment for large output. Facilities will be provided for employment of about 250 persons for initial operations, with this force to be more than doubled at early date.

Stevens Point, Wis. — The Whiting-Plover Paper Company, manufacturer of writing and other paper stocks, has let contract to Vulcan Manufacturing Company, Fond du Lac, Wis., for steel frame superstructure for new addition to power house at mill, recently referred to in these columns, and for which excavations are now in progress. Structure will be 32 x 52 feet, three-story high, reported to cost in excess of $75,000, with equipment. General erection contract previously has been let to C. R. Meyer & Sons Company, 50 State street, Oshkosh, Wis. Work on superstructure will begin soon. Helmick, Edeskuty & Lutz, Essex Building, Minneapolis, Minn., are consulting engineers.

Holyoke, Mass. — Paper City Manufacturing Company, Inc., 624 Hampden street, manufacturer of paper specialties, has filed plans for one-story addition for storage, loading and kindred service. Erection will be carried out by day labor and will be placed under way at once.

New York, N. Y. — S. Zinzi, 516 West 130th street, waste paper, has taken out a permit for erection of a one-story building at 519-21 West 130th street, for storage and baling service, etc. Erection is scheduled to begin immediately. J. J. Gloster & Company, 303 West Forty-second street, are architects and engineers.

Mobile, Ala.—The National Gypsum Company, 190 Delaware avenue, Buffalo, N. Y., is running on a capacity schedule at its fiber insulation board mill at Mobile, with maximum working quota in all departments. The mill is now about 90 days behind on orders, with incoming business maintaining at a high level.

New Haven, Conn.—Rockbestos Products Corporation, Nicoll street, manufacturer of wall board specialties, insulating board products, etc., has let general contract to C. W. Blakeslee & Sons, Inc., 58 Waverly street, for alterations and improvements in building at 11 East Pearl street, used for plant service, and work will be placed under way at once. Cost close to $15,000, exclusive of equipment.

Camas, Wash.—The Crown-Willamette Paper Company, manufacturer of kraft and other wrapping paper stocks, book and tissue papers, etc., has work under way on concrete superstructure for new four-story addition to mill, previously referred to in these columns, to be 110 x 120 feet, and is awarding miscellaneous contracts for completion work, including wiring, plumbing, painting, etc. New structure will be used for expansion in paper-converting department, and is reported to cost in excess of $150,000, with equipment. A portion of space will be used for storage and distribution. Reimers & Jolivette, Inc., Railway Exchange Building, Portland, Ore., has the general contract for erection. Company is a subsidiary of Crown-Zellerbach Corporation, 343 Sansome street, San Francisco, Calif.

St. Jerome, Que.—The Rolland Paper Company, Ltd., 116 St. Paul street West, Montreal, Que., manufacturer of bond, ledger and other writing paper stocks, has approved plans for new additions to mill at St. Jerome, consisting of two one-story structures, about 45 x 120 feet, and 15 x 80 feet, respectively. Erection will be carried out by day labor. Cost reported over $75,000, with equipment. Payette & Crevier, 477 St. Francois Xavier street, Montreal, are architects; Archambault & Roy, 6278 First avenue, Montreal, are engineers.

Walsh-Healey Purchases

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 25, 1941 — During the week ended June 7, the government bought $218,058 worth of paper and allied products under the Walsh-Healey act with the following orders:

$10,125 worth of kraft, waterproof paper for War, QMC, Philadelphia, from the Ruberoid Company; $10,813 worth of kraft, waterproof paper for War, QMC, Philadelphia, from Thomas J. Fannon & Sons; $21,772 worth of book paper for Government Printing Office from Marquette Paper Company; $25,086 worth of cover paper for Government Printing Office for Marquette Paper Company; $11,194 worth of stationery for Interior Department from Crown Office Supply Company; $42,000 worth of paper towels for Treasury, Procurement, from West Disinfecting Company; $12,031 worth of bond and mimeograph paper for War, QMC, California, from Wobbers, Inc.; $11,932 worth of paper bags for War, QMC, Texas, from Whitaker Paper Co.; $29,220 worth of toilet paper for Treasury, Procurement, from M. S. Ginn & Co.; $19,980 worth of writing paper for Government Printing Office from Marquette Paper Company; $11,720 worth of writing paper for Government Printing Office from Barton, Duer & Koch Paper Company; $12,183 worth of writing paper for Government Printing Office from Paper Corporation of U. S.

Newsprint Imports Rise

WASHINGTON, D. C., June 25— A rapid rise in newsprint paper imports in Nicaragua during 1940 is reported by the American Legation at Managua, which says that the annual volume averaged 403 metric tons from 1937 to 1939 and then increased to 562 metric tons last year.

The 40 percent increase is credited by the legation chiefly to the effects of the war and the fear of consumers that world suppliers would be severely restricted. The fear of higher prices, rather than increased newsprint consumption in Nicaragua, was responsible, according to the legation.

Ranking for years as a secondary supplier of paper to this market, the United States has been advanced by the war to a position where it supplied 90 percent of the total newsprint bought by Nicaragua in 1940.

BREAKING UP A LOG JAM

Log Jams are the bottle necks of woods operations. Faulty felts are the bottle necks of paper making. Maximum production of paper is curtailed when felts don't function properly.

Draper Felts — custom made to your specifications, will prevent jams or bottle necks in your machines. For details see a ***Draper Representative.***

Draper Felts Favor Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856 CANTON, MASS.

OUR REPRESENTATIVES *to serve you*

L. H. BREYFOGLE, Kalamazoo, Mich.
C. K. BEECHER, Delaware, Ohio
W. L. CAMPBELL, Savannah, Ga.
O. J. LELOFF, Vancouver, Wash.
RALPH E. BRIGGS, Canton, Mass.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending June 25, 1941

	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	27½	26¾	27¼
Celotex Corp.	9¾	9½	9½
Celotex Corp., pf.	69¾	69¼	69¾
Certain-Teed Products Corp.	3½	3½	3½
Certain-Teed Products Corp., pf.	31¾	29½	29⅞
Champion Paper & Fibre Co.	19½	19	19
Champion Paper & Fibre Co., pf.	103	102½	102½
Congoleum-Nairn Co.	16¾	16	16½
Container Corp. of America	16¼	14⅝	16
Continental-Diamond Fibre Co.	8⅛	7⅞	8⅛
Crown-Zellerbach Co.	12⅜	12¼	12⅜
Crown-Zellerbach Co., pf.	85½	85½	85½
Flintkote Co.	12¾	12⅛	12¼
Robert Gair	1⅞	1¾	1⅞
Robert Gair, pf.	10½	9¾	9¾
International Paper & Power	15⅛	14¼	14⅜
International Paper & Power, pf.	67½	65	65½
Johns-Manville Corp.	64½	62	63½
Johns-Manville Corp., pf.	127	126½	126¾
Kimberly Clark Corp.	....	....	....
MacAndrews & Forbes	28	28	28
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	22¼	21¾	22¼
Mead Corp.	8½	8¼	8½
Mead Corp., pf.	66½	66½	66½
Paraffine Companies, Inc.	27⅞	27½	27⅞
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	13¼	12½	12½
Rayonier, Inc., pf.	25	25	25
Ruberoid Co.	16⅜	16⅛	16⅛
Scott Paper Co.	35⅜	35	35⅛
Scott Paper Co., pf.	109½	109	109
Sutherland Paper Co.	18¼	18⅛	18⅛
Union Bag & Paper Corp.	11½	10¾	11
United Paperboard Co.	3	2⅞	3
U. S. Gypsum Co.	59	58	59
U. S. Gypsum Co., pf.	175	175	175
West Virginia Pulp & Paper Co.	18¼	17	17½

New York Curb Exchange

High, Low and Last for Week Ending June 25, 1941

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	....	....	....
Great Northern Paper Co.	36	35	35½
National Container Corp.	11⅛	10⅞	11
St. Regis Paper Co.	2⅛	2	2
St. Regis Paper Co., pf.	99½	97	99½
Taggart Corp.	2¼	2⅛	2⅛
Hummel-Ross Fibre Corp.	5⅛	5⅛	5⅛

Interest Due Abitibi Bondholders

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 23, 1941 — Since the court recently granted application for an order authorizing the receiver and general manager of the Abitibi Power and Paper Company to pay $6,274,710 cash on account of principal to bondholders, discussion has centered around the question of how much arrears of interest are due bondholders and how much the company will be called upon to pay out on this account. Opinions on the amount involved have differed because the bases of computation have varied.

"Financial Counsel" furnishes data on several different bases of computation and indicates how widely results vary.

As at December 31, 1940, "Financial Counsel" shows, principal, plus unpaid interest for nine years, without interest on unpaid interest, aggregates $69,987,150, of which $48,267,000 is principal, leaving interest overdue and not paid, $21,720,000.

Principal and interest overdue and not paid, plus interest on interest not paid, is indicated to aggregate $74,913,231. Subtracting principal of $48,267,000, the residue is made up of interest not paid of $21,720,000 and interest on interest not paid of $4,926,081.

If the existing premium on New York funds is added to principal, interest overdue unpaid and interest on interest not paid, the aggregate amount the company would have to pay out would be $83,153,536, as follows:

Principal	$48,267,000
Interest overdue and not paid	21,720,000
Interest on interest overdue	4,926,081
Premium on United States funds	8,240,455
Total	$83,153,686

On a similar basis, the amount due and overdue June 30, 1941, would be approximately $85,000,000.

Southern Kraft Merged Into I. P.

Richard J. Cullen, president of International Paper Company, announced Thursday that Southern Kraft Corporation, formerly a wholly-owned subsidiary, has been merged into International Paper Company as a sequel of the recent bond financing. International Paper Company's Southern Kraft division will continue the business of Southern Kraft Corporation without change in the latter's personnel.

This merger marks another step in the simplification of the company's corporate structure. International now owns directly all of the major operating properties controlled by it in the United States.

Southern Kraft Corporation was organized in March, 1930, to acquire and operate International's kraft board and paper mills in southern United States. These mills now have an annual capacity of about 1,200,000 tons and are located at Springhill, La.; Georgetown, S. C.; Panama City, Fla.; Mobile, Ala.; Camden, Ark.; Moss Point, Miss.; and two at Bastrop, La.

This merger does not involve any exchanges of securities outstanding in the hands of the public. All the stock of Southern Kraft Corporation was owned by International Paper Company. All of Southern Kraft Corporation's outstanding First Leasehold and General Mortgage 4¼% bonds have been called for redemption on July 12 in connection with the recently announced sale by International Paper Company of $26,500,000 3⅝% Bonds. The relatively small amounts of outstanding purchase money obligations of Southern Kraft Corporation will continue as obligations of International Paper Company, which is the successor company.

Dennison Invites Tenders

Dennison Manufacturing Company is inviting tenders of its debenture stock at $115 a share flat and of its prior preferred stock at $52.50 a share flat. In establishing these prices, the directors have taken into consideration the dividends payable August 1 to stockholders of record July 23, which dividends will not be paid on stock accepted.

In a letter to holders, President Dennison states that in order to take advantage of present low interest rates by replacing a portion of the debenture stock and/or prior preferred stock with debt carrying a low rate of interest the company has arranged to borrow $1,000,000. Tenders of debenture stock will be accepted first at $115 a share flat offering.

B. C.'s Paper Industry

British Columbia's pulp and paper industry, representing an investment of more than $60,000,000, is rolling up a more impressive production total than ever before and is laying the foundation for a strong position in world markets following the return of peace.

Value and volume of B. C. mills' output last year was about 20% higher than in the previous year, and 1941 is expected to see a further advance because a ready sale is being found for all the pulp and paper that can be produced and production facilities at several plants have been increased.

Before the war pulp and paper from the Baltic countries and Scandanavia were an important competitive factor in the world market and in many countries served by British Columbia mills the entry of Swedish and other north European pulp constituted an unsettling factor.

As a result of the war there has been a gradual stepping up of production in all B. C. mills. Powell River Company and Pacific Mills, the only two newsprint producers on the Pacific coast, have been operating close to peak of capacity since the war began, and both these companies have continued to diversify their production—manufacturing more pulp and items other than newsprint—to meet war-born requirements in markets that previously bought elsewhere.

B. C. Pulp and Paper Company, operating two mills at Woodfibre and Port Alice, has vastly increased its production of rayon and bleached sulphite pulp during the past three years and since the war has found ample justification for the costly expansion program which it carried out in 1937.

Westminster Paper Company at New Westminster, producing a varied line of specialties, has had so much new business that it plans to spend more than $200,000 this year on new building and equipment.

Sidney Roofing and Paper Company is another unit in the industry that has found enlargement of plant necessary to meet the flow of orders.

Revival in the demand for kraft paper resulted a few months ago in reopening of the Howe Sound plant of Vancouver Kraft Corporation.

While there has been plenty of business to keep existing pulp and paper organizations operating at close to capacity the unsettled condition of financial markets and the uncertainties of trade in wartime have discouraged the launching of new companies in this field, but it is expected that after the war several of these projects will bear fruit.

Before the war began two powerful financial groups were planning to go ahead with pulp mill development on Vancouver Island, and Prince Rupert and Prince George have also been regarded as probable sites. Undertakings of this kind, however, require substantial investment and the assurance of stabilized markets.

A true dollar-and-cents conception of B. C.'s pulp and paper production is difficult to arrive at, but gross revenue from newsprint alone last year was estimated at $13,500,000 and with prices unchanged it should be about the same this year. Pulp is more difficult to calculate as it is produced by several companies some of which do not make separate returns for their different classes of output.

SINCE 1820 FINER PAPER MILL MACHINES
PAPER MILL MACHINERY
Straight, Harper and Edwards Fourdriniers—For book, bond or fine tissues.
Cylinder and Wet Machines. Jordans — Pumps — Calenders "Rainstorm Shower Pipes".
Below: THREE PLUNGER STUFF PUMP
For the Finishing Room
UNDERCUT TRIMMER
Electric Eye Web Edge Control — Slitters—Reels—Rotary Cutters.
Above: Rotary SPOT CUTTER
FOR BAG PLANTS
Flat, square and satchell bottom bag machines—single and multiwall pasted valve bag machines — tuber and bottomer type bag conveyors.
Below: HEAVY DUTY MULTIWALL TUBER WITH COMPLETE AUTO COMPENSATOR FOR PREPRINTED ROLLS.
1828
The SMITH & WINCHESTER Manufacturing Company
SOUTH WINDHAM CONNECTICUT
6

For Positive Distribution

Before Your Slice

The ENTIRELY NEW SANDY HILL BERTRAMS FLOW DISTRIBUTOR

Users claim eight immediate results:

1. Stock uniformly spread over the full width of the machine, irrespective of consistency, tonnage or paper used.
2. Equal distance traveled by each particle of stock whether delivered to the edges or the center of any machine.
3. Paper of more even caliper testing uniformly in strength and stretch.
4. Cockling due to formation reduced to absolute minimum.
5. More uniform drying because of a more uniform sheet.
6. Predetermined amount of mixing of stock, discharging it from box in perfect condition for forming sheet, permitting a longer fibered sheet with a good formation.
7. Reduction of space for installation.
8. Cleaner than ordinary type of head box.

Write for complete information and data necessary for quotation.

The SANDY HILL IRON & BRASS WORKS

HUDSON FALLS, NEW YORK

Sole licensee in the U. S. A. for this patented flow distributor.

C. V. Jewell Heads Twine Club

The Paper and Twine Club held its annual meeting and Golf Tournament at the Spink Wawasee Hotel, Lake Wawasee, Indiana, on Thursday, Friday and Saturday, June 5, 6, and 7, 1941. The session opened with a regional meeting of the National Paper Trade Association's Wrapping Paper Merchants in the Convention Hall of the Hotel, at 1:00 P.M., Thursday, June 5. In the absence of vice-President C. E. Roach, Assistant Secretary Robert Ziegler acted as chairman of the meeting. A very interesting program was presented, involving a discussion of general market conditions in the wrapping paper field, the condition of merchants' inventories, the situation as far as manufacturers' cost to merchants were concerned and the future outlook under war and defense conditions. Merchants almost uniformly reported a good volume of business, comparatively low inventories, firm mill prices, and the expectancy of a good volume of business indefinitely in the future.

The following officers were elected:—President, C. V. Jewell, Capital Paper Company, Indianapolis, Ind.; vice president, E. J. Dunkin, Tanglefoot Company, Grand Rapids, Mich.; secretary-treasurer, John L. Rickey, Cincinnati, Ohio.

On Friday evening at 8:00 P.M. the annual banquet of the Paper and Twine Club was held with music, story-telling and general hilarity as the programme of the evening.

The guest of the evening was Charles W. Boyce, secretary of Kraft Manufacturers Association and assistant to D. C. Everest, member of the Advisory Committee on Paper to the Office of Production Management of Washington, D. C. Mr. Boyce, who is also a member of the club, made a report on conditions in the paper industry and trade and made some valuable suggestions for the guidance of those in the paper business under war and defense conditions.

Paper Board Prices Stabilized

WASHINGTON, D. C., June 25, 1941—Announcing stabilization of prices of paper board, Leon Henderson, director of the Office of Price Administration and Civilian Supply, said the waste paper industry will be asked to conserve supplies and increase the amount collected.

This will be of great importance in retaining stable prices of paper board, he said, since waste is an important raw material.

Henderson forecast eventual establishment of maximum prices in the container, carton and folding box industries.

A maximum of $42.50 per ton was set for chip board after Henderson obtained agreements from individual producers to comply with the "suggested" quotations. The price for single manila lined board is $57.50 per ton and $72.50 per ton for white patent coated news board.

Henderson said these prices will be adhered to "unless unusual and now unforeseen increases in cost make this policy impossible." Producers may sell at lower base or net prices if they wish, he stated, adding that the agreement is expected to end the practice of ordering on a "when delivered" price basis instead of a current price basis.

U. S. Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 25—1941—Government Printing Office has received the following bids for 48,000 pounds (400,000 sheets) of 25 x 38 offset paper; Mudge Paper Company, 7.8 cents; Paper Corporation of U. S., 6.37 cents; Stanford Paper Company, 7.1 cents; R. P. Andrews Paper Company, 7.3 cents; and Cauthorne Paper Company, 7.3 cents.

For 38,500 pounds of 38 x 48 offset paper; Paper Corporation of U. S., 6.85 cents.

For 5,000 pounds of 24 x 36 rope manila paper; R. P. Andrews Paper Company, 19.5 cents.

For 71,460 pounds of 35 x 46, 100% rag, white chart paper and 83,880 pounds of 30 x 42 same; R. P. Andrews Paper Company, 18.47 cents; and Old Dominion Paper Company, 23.97 cents.

For 115,000 pounds of 24 x 38 offset paper; Paper Corporation of U. S., 6.94 cents; Stanford Paper Company, 7.23 cents; R. P. Andrews Paper Company, 7.3 cents; and Cauthorne Paper Company, 7.3 cents.

For 107,100 pounds of 32 x 52 M.F. book paper; R. P. Andrews Paper Company, 6.51 cents; Stanford Paper Company, 6.92 cents; Barton, Duer & Koch Paper Company, 6.59 cents; Whitaker Paper Company, 6.8 cents; Marquette Paper Company, 5.74 cents; and Paper Corp. of U. S., 6.74 cents.

For 23,749 pounds of 17¼ x 23, 50% rag, buff ledger paper; Mudge Paper Company, 12.75 cents; R. P. Andrews Paper Company, 13.65 cents; and Paper Corporation of U. S., 11.63 cents.

For 48,000 pounds of 38 x 50 supercalendered book paper; R. P. Andrews Paper Company, 5.94 cents; Stanford Paper Company, 7 cents; Marquette Paper Company, 6.48 cents; and Whitaker Paper Company, 7.05 cents.

For 64,750 pounds of 25% rag, 31½ x 48 white bond paper; Stanford Paper Company, 11.38 cents; Baxter Paper Company, 10.85 cents.

For 35,000 pounds of 29 x 41 coated book paper: R. P. Andrews Paper Company, 8.02 cents; Stanford Paper Company, 8.2 cents; and Butler Company, 8.415 cents.

For 44,400 pounds of 24 x 38 high finish sulphite manila tag board: Paper Corp. of U. S., 6.24 cents; R. P. Andrews Paper Company, 6.6 cents; Stanford Paper Company, 6.31 cents; Old Dominion Paper Company, 7.49 and 6.189 cents; Perkins-Goodwin Company, 6.245 cents; and Mudge Paper Company, 6.28 and 7.65 cents.

For 35,100 pounds of 50% rag, 38 x 48 white ledger paper; 12.4 and 12 cents; Stanford Paper Company, 14.38 cents; and Paper Corporation of U. S., 11.13 cents.

For 40,125 pounds of 32½ x 42, 50% rag, 32½ x 42 same; Mudge Paper Company, 12 cents; Whitaker Paper Company, 6.5 cents; Old Dominion Paper Company, 15.49 cents; and Paper Corporation of U. S., 11.13 cents.

TRADE AUTOMATIC MARK

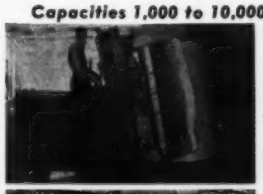
Manufacturers for Over Thirty Years

MODERN Electric Propelled INDUSTRIAL TRUCKS

FOR ECONOMICAL MATERIALS HANDLING

- LOW AND HIGH LIFT TRUCKS
- FORK TRUCKS
- PULP AND BALE HANDLERS
- PAPER ROLL HANDLERS
- LOAD CARRIERS
- TRACTORS — CRANES

Capacities 1,000 to 10,000 Lbs.



☆ Center-Control 3000 to 6000 lb. capacity motorized revolving paper roll handlers.

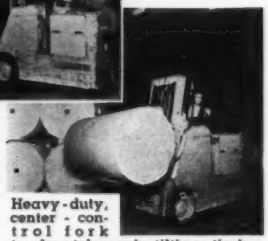
☆ Center-Control 6000 to 7000 lb. capacity heavy-duty, motorized revolving paper roll handlers.

☆ Box-car bale and roll unloader for single tier storage. 1500 to 2500 lbs.

☆ Box-cars can be loaded and unloaded in record time — with motorized roll upender. Capacities up to 3000 lbs.

☆ Chisel type pulp handlers for box-car loading, unloading and stacking.

☆ 6000 lb. capacity low-lift and high-lift trucks for skid transportation of small rolls and flat stock.



Heavy-duty, center-control fork trucks—telescopic tilting, tiering type for low-cost roll storage and transportation. Capacities 3000 to 6000 lbs.

Listed Under Reexamination Service of UNDERWRITERS' LABORATORIES

AUTOMATIC TRANSPORTATION CO.

78 W. 87th St. Div. of the Yale & Towne Mfg. Co. CHICAGO, ILL.

State Container Leases Building

The State Container Company has leased the six-story industrial building at 449-451 West 30th street, between Ninth and Tenth avenues, New York from the Emigrant Industrial Savings Bank.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Henry J. Berger

EDITOR

Vol. 112 June 26, 1941 No. 26

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Technical Association of the Pulp and Paper Industry, Fall Meeting, Ann Arbor, Mich., September 16-19.

PRIORITIES

The requirements of the national defense program are most extensive. They include large-scale aid to Great Britain as well as the huge requirements of the United States. Time is an important factor and in order to provide sufficient materials and facilities for converting materials into military goods of a wide variety, a steady flow of all materials essential to national defense must be assured and maintained. To accomplish this huge and complicated undertaking, priorating of vital materials in large volume is a major consideration.

Unfortunately, many business concerns not directly engaged in manufacturing goods for defense, must be placed at a disadvantage and will be handicapped through no fault of their own, by the demands of the Government through one of its most important agencies, the Office of Production Management and Civilian Supply, commonly referred to as the OPM. The need of defense is considered by experts as imperative and consequently sacrificies must be accepted by business and by individuals, as in a good cause. It is thus plain enough that the normal course of business must become more and more diverted to meet the huge requirements of national defense. In other words, we must be prepared to accept standardized grades and styles in clothing, household appliances and a wide range of consumer goods. The present range of size, colors and weights in paper may also be changed in the future. The threatened shortage in a number of materials is a forerunner of more serious shortages in more materials to come. The United States is now in a transitory state from a normal to a defense or military economy.

The probable effect of priorities on the paper and pulp industry cannot be foreseen. Some chemicals are expected to be rationed in the future and the present high standard of brightness in paper may have to be lowered. The trend of today, however, points to a greater use of some grades of paper and paper board, with the expansion in utility. It also seems certain from present-day reports that paper manufacturers will have to face the problem of higher costs. It seems improbable that the Government will be more than moderately successful in controlling prices. The business man, and particularly the smaller business man, faces a difficult period of readjustment.

This indication, which management should face resolutely and without fear, is reflected in the timely announcement and explanation made by Thurman W. Arnold, Assistant United States Attorney-General. In addressing the American Business Congress of the smaller business men, at New York, on June 14, Mr. Arnold said that, while big business was not unpatriotic it feared overexpansion and overproduction would cut its dividends after the European conflict. Mr. Arnold also said that labor organizations, but not all of them, were putting protective tariffs around cities, restricting skills, preventing use of more efficient methods, charging small business men for unnecessary labor and crushing small business men in jurisdictional wars. "There is, however, one instrumentality," Mr. Arnold said, "in the government backed by fifty years of tradition, which stands ready to free the market for new enterprises. That instrumentality is the Anti-Trust Division of the Department of Justice."

In asserting that Labor's exploitation of consumers and small business men has not been forgotton by the Anti-Trust Division in the furor created by defense strikes, Mr. Arnold said that, "We are trying to bring it to your attention now, so that necessary amendments to the law can be had to compel powerful labor organizations to confine themselves to the legitimate purposes of those organizations . . . Letting the little fellow in means future competition and lower prices. Above all, big business thinks that it alone can do the job. Such patterns of thought have resulted in the sluggish tempo of advance that has put the great industrial democracies so far behind Germany in the race for production of basic supplies . . . We will get no real expansion of production until we free the market so that the competitive force of small business, each anxious to produce and get a share for itself, may operate."

The system of priorities in basic materials was cited by Mr. Arnold as among the dangers confronting small business by excluding them from a share in defense production and the restrictions on the distribution of necessities and artifically fixed prices. "Unless there is some organized effort," Mr. Arnold continued, "to represent the interests of small business, to see that priorities are not used in such a way

that they lead to monopoly control, little business may have to go out of business."

Although civilian requirements of many metals will be curtailed, there is no indication that the consumer will be required to be inconvenienced through lack of supply of most grades of paper. The current trend in production and shipments of many grades of paper is very high and it is expected to continue so long as general business activity continues to stimulate a steadily increasing demand for a wide variety of paper and paper products. The question of fair prices, based on rising costs, appears to be a difficult problem to solve. With an increase in income and a curtailment in civilian goods creating pressure for higher prices, it would seem necessary for the government to have power to control income to successfully control prices. A diversion of some of this excess income into government bonds is viewed as helpful in this direction and compulsory purchase of defense bonds has even been suggested by some economists as a practical method of checking prices from rising too swiftly and too high.

Tag Men Deny Charges

Tag Manufacturers Institute, 370 Lexington avenue, New York, Frank H. Baxter, its secretary-treasurer and executive director, and 31 member companies of the Institute, have filed answers to a complaint issued by the Federal Trade Commission which alleged practices in restraint of trade in the sale of tags, pin tickets and similar marking and pricing devices making general denials of the complaint. Hearings will be held in due course.

The respondent manufacturer members named in the complaint are:

Acme Tag Co., Minneapolis; Allen-Bailey Tag Company, Inc., Caledonia, N. Y.; American Tag Company, Chicago; American Tag Company of New Jersey, Newark; Atlas Tag Company, Neenah, Wis.; Badger Tag Company, Inc., Random Lake, Wis.; A. C. Baldwin & Sons, Austin, Tex.; Campbell Box and Tag Company, South Bend, Ind.; Central Tag Company, Chicago; Cupples-Hesse Envelope and Litho. Company, St. Louis; Dancyger Manufacturing Company, Cleveland; The Denney Tag Company Incorporated, West Chester, Pa.; Dennison Manufacturing Company, Framingham, Mass.; Eastman Tag and Label Company, San Francisco; Ennis Tag and Printing Company, Ennis, Tex.; Haywood Tag Company, Lafayette, Ind.; International Tag and Salesbook Company, Chicago; Keystone Tag Company, West Chester, Pa.; A. Kimball Company, New York City; Marion Manufacturing Company, Atlanta; J. L. May Company, New York; Michigan Tag Company, Grand Rapids; Midwest Tag Company, St. Louis; The National Tag Company, Dayton; The Reyburn Manufacturing Company, Inc., Philadelphia; The Robinson Tag and Label Company, New York; Rockmont Envelope Company, Denver; Salisbury Manufacturing Company, Central Falls, R. I.; The Standard Envelope Mfg. Company, Cleveland; Tagcraft Corporation, Lancaster, Pa.; and the Waterbury Buckle Company of Waterbury, Conn.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
May 10	99.2	May 11	88.6
May 17	98.8	May 18	91.7
May 24	100.8	May 25	92.7
May 31	97.7	June 1	87.6
June 7	98.1	June 8	91.3
June 14 (Prelim.)	99.3	June 15	91.9

(7-day operations prevalent)

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.1	89.4	92.3	96.4	99.5	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date	68.5	78.2	89.1	67.4	79.6	86.8	92.9
Year Average	69.9	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figuress are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	*84*	..	..	..	..	..	..	..	..

Week ending May 10, 1941—84
Week ending May 17, 1941—84
Week ending May 24, 1941—85
Week ending May 31, 1941—84
Week ending June 7, 1941—84
Week ending June 14, 1941—*88*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Installs New Refining Equipment

One of the major items included in the extensive improvement program being carried on by the Sorg Paper Company, Middletown, Ohio, is the rebuilding of the beater room of the Sorg Division which houses three of the company's six paper machines, and the installation of the most modern refining equipment for one of these machines which manufactures high-grade sulphite and kraft specialties. Announcement has been made by officials of the company that contracts for this work which involves an investment of approximately $150,000 have been closed, and it is expected that the improvements to the building will be completed and the new refining equipment will be in operation by next fall. Plans have been made to insure no loss of production while these improvements are being made. Furthermore, the quality of the various papers manufactured in this division will be in no way affected during this period.

The entirely new refining equipment for the largest machine in this division of the company includes a large hydropulper, three enormous tile lined chests, and two of the largest size Shartle Brothers' cyclifiners. This equipment will insure absolutely uniform treatment of all stock and an improvement of quality in all specialties manufactured on this machine, and on certain papers production will be substantially increased.

This is the same type of refining equipment that the company has had in operation for nearly a year on its 75 ton per day kraft machine in the Frank Smith Division. This installation has proved so thoroughly satisfactory from the standpoints of quality, production, and cost, that the company is enthusiastic about the results anticipated in this second installation of similar equipment.

"What a stymie!"

...MOOED THE COW ON PAGE 52 TO THE MAN ON PAGE 51

"You heard me!" shouted the golfer. "Beat it. Vamoose!"

"Oh, but I'm so comfy," sighed the cow. "These lazy spring days. Ho-hum . . ."

"What you need are some Krebs pigments!"

"Pigments? A new cure for spring fever?"

"No!" roared the golfer. "A cure for a *show-through* like you. Krebs pigments take *show-through* out of the thinnest paper."

"Is that so?" yawned the cow. "Tell me more!"

"It's the truth. Krebs make paper white as your milk.'

"Huh! Stop getting personal."

" 'Bout time I did," said the golfer. "Besides, Krebs pigments make printing stand out sharp and clear, too."

"That so? Most interesting, most interesting . . ."

"Darn right! And those Krebs experts can solve . . ."

"Anything? Good. Let 'em go to work on that wicked slice of yours."

"Not *golf* experts . . . they're *pigment* experts. Krebs technical men can solve the toughest pigment problems."

"You don't say. And now I suppose the big smart man is going to report me to the Grounds Rules Committee?"

"No!" roared the golfer. "I'm going to write Krebs direct myself *today*."

KREBS PIGMENT & COLOR CORP.

1007 Orange Street...Wilmington, Delaware

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Knowns and Unknowns in Coating Colors*

By B. W. Rowland[1]

Abstract

Some of the factors, such as raw stock, clay and starch, affecting the coating of paper are discussed.

With the introduction of the so-called machine coating operation, the field of coating technology has required extension to include not only the consequences of mechanical innovations in the operation, but also the influences of higher speeds. Basically, all coating operations are alike in that color is applied to raw stock and, for this reason, there appear to be certain critical fundamentals relating to all coating procedures. In the standard and slower speed coating practice, many of these variables are known and can be kept under control through the usual expedients in color compounding and machine operation. Some of the variables which appear to be critical only to a minor degree in the slower coating practice, however, become extremely critical in the fast operation, due not only to increased speed but also to the different mechanical conditions as well. Consequently, more exacting conditions are imposed by the operation which not only require unusual care in color formulation but also a precise control of many other factors. When our more intensive experience with the high-speed operation began several years ago, numerous hitherto unknown variables appeared to have become so critical that they had to be considered of major concern for the attainment and maintenance of maximum quality in the product. We have learned subsequently that some of these fundamentals to which we called attention, although of a far less critical nature, nevertheless must be considered of importance even in slow-speed coating.

A few of the hidden variables in coating have been "smoked out" by the high-speed operation and have become recognized as of such importance that it not only has become necessary but possible to study some of them. Some ground has been covered—much more remains to be explored. The present discussion is intended as a review of some of the facts which are now established in the new technology and to outline our ignorance by means of a speculative "analysis" of certain unknowns that require attention.

The Coating Color

In this discussion, we refer to the rapid paper machine coating operation, the essential feature of which is the application of the color by means of roll pressure. It has been experienced by all familiar with this operation that a satisfactory coating is produced only when a rather complex set of conditions are favorable. Many of these conditions relate to the color. But as the raw stock varies and as machine conditions and speed vary, it is necessary to modify the color to fit in with all the other conditions. It is not too dogmatic to say that the alteration of any one of these many variables will require the adjustment of the color to meet the new requirements.

A coating color, consisting essentially, for example, of clay and starch, must be found by trial to fit the raw stock and other essential features of the operation. To approximate the correct color, it is necessary, unless experience has already provided the clue, to conduct a "shot-gun" set of experiments, varying as independently as possible, the type and particle size range of the clay, the dispersing agents, the type and amount of starch and the total solids content. The only test we know of evaluating the color for a given operation is making the actual application either experimentally on the production equipment or with the aid of the small laboratory coating machine models now at hand in a number of mills and, incidentally, available in our own laboratories. In evaluating the suitability of the color, the coated sheet itself, made with the color in question, will be the best guide. It is now well established, at least in all cases that have thus far come to our attention, that a viscosity measurement either on the clay-water mixture or on the completed color, using any standard type viscometer with a fixed rate of shear, has practically no significance as an index of the coating characteristics of the color. Such a measurement may serve a useful purpose as a rough guide in order that the color may be held within a certain range of consistency, but no more.

Once the correct or approximately correct color formula has been found for a given case, it becomes essential to effect the necessary controls for uniform results. Viscosity being inadequate for these purposes, we must investigate the sources of existing variables, how to measure them, and how to gain an adequate control over them.

The Coating Clay

As pointed out by the author recently, the clay itself has been found to exert a profound influence, perhaps a predominating one, on the colloidal properties of the coating color. Without attempting to re-

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] Research Laboratory, Institute of Paper Chemistry, Appleton, Wis.

view this interesting subject of clay at this time, it is important at least to emphasize again that the correct choice of clay or blends of clay is essential if the color is to adjust itself to the given operation. The colloidal characteristics of clay now known to be critical are related to type, particle size and, to some extent, to base-exchange behavior. As previously stated on another occasion, the mineral species constituting a clay sample will be found to control the colloidal properties for the most part, and aside from differences in chemical constitution, these clay-mineral species differ mostly in their hydration behavior, base-exchange capacity, and particle size. The hydration capacity of the clay has been found to be one of its most essential features for coating, this property being affected by the secondary considerations of particle size and base exchange. The water-holding capacity of a clay-water mixture is reflected in the water-holding capacity of the completed color, somewhat modified by the presence of starch and other constituents. The water-holding characteristics are now almost universally being found to be of fundamental importance. The reasons for this will be pointed out later.

Thixotropy and Dilatancy

The inadequacy of the usual viscosity measurements to characterize the coatability of the color is demonstrated by experience with the actual operation and by studies in progress in our laboratories. This is because of peculiar flow properties which deviate strongly from those of simple viscosity as in a viscous liquid. For the present purpose, dilatancy may be referred to as the phenomenon of increased resistance to flow with increasing pressure or rate of shear, and thixotropy may be defined as the opposite effect—disproportionately greater flow at higher rates of shear. Thus, it happens that the flow properties of clay slips and coating colors will change considerably at different rates of shear or speed of application. Among the variables which influence these flow properties are the following:

Clay mineral species
Particle size of clays and base exchange factors
Solids content of color
Amount and type of starch
Pressure of coating rolls
Type and amount of dispersing agent
Machine speed
Absorptive qualities of the raw stock

The current research at the Institute has partially revealed the relationship between these peculiar flow properties, type and amount of dispersing agent, particle size of the clay slip itself and to some extent of the completed coating color. While the results of this work will not be discussed in any detail at this time, it can be stated that, even at low rates of shear, marked thixotropic and dilatant behavior is found among the coating clays now in use and that these properties, considerably affected by the addition of starch are related to the type of clay, particle size, type and amount of dispersing agent and solids content. There are zones, for example, of dilatancy, generally in evidence at solids contents much higher than that at which the color is applied. Our interest in the viscous behavior of color at these very high solids content will become more apparent later in this discussion.

The Starch

When starch and clay are compounded to form the color, important changes result in the flow properties. The author has previously cited an example from coating mill experience illustrating that the viscous characteristics of a clay-water mixture may be greatly affected in either direction when the starch is added. This we presume to be due to the redistribution of electrolytes, particularly cations, and water between the two competitive colloids. Here is where we enter one region of the unknown. Speculation will permit us to think that the starch, having an affinity for the salt that is used for dispersing the clay, will manage to gain possession of some of it—thereby leaving the clay with insufficient dispersing agent, with a result that a partial agglomeration and thickening may occur. In another case, wherein sufficient dispersing agent is added to a clay requiring less of such dispersant because of its own content of exchangeable base such as sodium, a viscosity higher than that of optimum dispersion may result; but upon the addition of starch, the excess dispersant may be withdrawn from the clay with an attendant fall in viscosity. It is to be anticipated that starches converted by various methods and to different degrees will participate diversely in these phenomena. If, in the oxidative conversion methods, the starch is left with acidic groups, its capacity for alkali would be expected to be much greater than that of an enzyme conversion which presumably results only in a scission of the starch molecules. This does not in itself mean that any particular conversion procedure is preferable over another, but it does emphasize the probability that future knowledge will reveal that distinction must be made between the various starch conversions, both as to type and amount of conversion treatment. Comprehensive studies of this character are now in progress in our laboratories.

The Raw Stock

We may assume that we have now essentially completed the compounding of our coating color, observing several critical phenomena such as are known and partially known. Before considering the phenomena attending the application of the color to the raw stock, it is necessary to observe certain capillary phenomena that will play a role in the receptivity of the paper for the coating. It must be clearly realized that the resistance of paper to water penetration and the resistance to the penetration of colloidal matter are not one and the same. The manufacturers of butcher's wrap are well aware of this. What underlies this difference is, in large measure, the electrocapillary effects that originate from the electric charges lining the walls of the pores in the sheet and the electric charges carried by the colloidal particles of the clay and starch. The measurements of these charges on cellulose, clay, and starch show that all are normally negatively charged. If this be the case when the color is applied to the sheet, the conditions are favorable for appreciable penetration of the starch, and possibly some of the clay, into the pores of the sheet, because in this instance the negative starch or clay can pass over the pore surfaces bearing the same charge. If, however, as can be demonstrated and as has been demonstrated in our laboratories, the pores of the sheet can become positively charged through the presence of such materials as alum and alumina, the capillary phenomena are quite different. In this case, the starch will still be negative but, in making its entry into the pores of the paper, it will be attracted to the positively charged walls and its farther penetration will become arrested. These effects can be readily demonstrated by the use of dyestuffs, using the acid dyes as the nega-

tively charged particles and the basic dyes as positive. If unsized paper is dipped into solutions of these dyestuffs, it will be noted that, in both cases, the water transverses the paper, that the acid dye will accompany the journey of the water, but the basic dye will not. By incorporating sufficient alumina or alum into the sheet to convert the cellulose surfaces into a positive condition and repeating the experiment, it is found that the basic dye will follow the water but that the acid dye does not. (These results are obtainable with pure dyestuffs and not with commercial dyes containing added salts; these salts exert additional influences which obscure the effects described.) It has been demonstrated in our laboratories that these electrocapillary effects greatly influence the results of tub sizing with starch and their significance for other operations, such as calender coloring, is obvious. It should be emphasized that the electrocapillary effects can be entirely independent of water penetration effects, some of our work having been conducted on unsized paper throughout.

The Application of the Colors

We have now considered some of the fundamentals relating to (*a*) the water-holding capacity of the color, (*b*) the viscosity behavior of the color, and (*c*) the receptivity of the raw stocks. It is now in order to consider the several colloidal phenomena that accompany the application of color to stock. In this instance, let us confine our attention to the mechanical conditions of fast coating machine operation. Essentially, we need only to assume for this purpose that the raw stock is passing through a roll nip and that the coating is being applied simultaneously to both sides of the sheet as it enters the nip. The factors which we have stressed above are: (*a*) viscous flow properties of the color, (*b*) water-holding capacity of the color, and (*c*) the receptivity of the raw stock. Inasmuch as all of these factors operate simultaneously at the instant of contact of color and raw stock, it is impossible to consider them separately. What probably happens is something like this: As the pressure of the roll is exerted on the color, the latter will either become more fluid (thixotropy) or less fluid than it would appear when examined by laboratory instruments measuring viscosity at low rates of shear (dilatancy). If it becomes more fluid, the consequence is obviously that of great thinning out and a greater release of water to the raw stock. This release of water to the raw stock will, for the reasons outlined above, be governed by the characteristics of the stock. But let us in this case assume that we are dealing with a raw stock of constant properties. The release of water as described for the clays will also be governed to some extent by the other materials used in the color, and it should be emphasized that the transfer of water and adhesive to raw stock will also be influenced by the colloidal changes in structure of the color as induced by the high shearing conditions brought to bear upon it, as evidenced by the alteration of its viscosity. If the color becomes dilatant under these conditions, it will resist flow and thinning out, and because of these effects, it will hold its content of water and adhesive the more tenaciously. The water and adhesive transfer, in any case, will have much to do with the anchorage of the coating to the sheet, its thinning down (basis weight), and the manner in which it will smooth out. There must be an optimum water and adhesive transfer for best results in anchorage to the raw stock, levelling-out properties, freedom from dusting, and flaking off of the color.

After the coating leaves the pressure of the rolls, there will be an instant during which the color will not have recovered from the pressure exerted upon it; its solid content, due to loss of water, will be considerably higher, especially in that zone of concentration where, according to recent work in our laboratory, the dilatant tendencies are most in evidence (65-70%). The presence of dilatancy for an instant after the product leaves the rolls will result in a slight amount of rigidity in the coating and a loss of flow properties. This will retard or prevent levelling out under the influence of gravity, but at the same time it will prevent the sucking down of the color into the raw stock as the latter expands due to the absorption of water and the attendant swelling action. A generally opposite set of consequences can readily be visualized for the case in which the color may possess thixotropic tendencies under the shearing conditions which prevail. However, there are compensating forces at work because of the two essential matters of flow and water release. It happens that thixotropy is more generally an attribute of the more hydrous clays, whereas dilatancy is more common in the less hydrous clays. Thus the effect of rapid shear on a hydrous thixotropic color will cause it to thin down, but the release of water by the color under these conditions is somewhat resisted by the strong water-holding capacity of the hydrous clay. Also, the influence of pressure on a dilatant color will cause the less hydrous clay to thicken and the water release, even from a less hydrous clay, will be greatly diminished by the onset of the dilatant condition.

In conclusion it may be stated that this discussion has not given emphasis to the other variables as listed earlier. Among these the choice and amount of dispersing agent for the clay, the choice and amount of converted starch, the solids content, the characteristics of the raw stock, roll pressure, and machine speed, are all inter-related in a manner that would involve too much detail for the present discussion, even if the complexity of their interrelation were sufficiently known. Research and experience will, it is believed, not only lead to new knowledge concerning the known variables in problem, but will doubtless reveal additional factors which thus far have escaped recognition. What applies to the fast machine-coating operation will to some extent relate also to the standard slower operation, so that in this way what may be learned from the more critical operation may help to clarify the problems in the coating field generally. Fundamental laboratory studies of the materials employed in compounding coating color are of great assistance in the new coating technology; but only as these laboratory findings are correlated with actual coating machine application can a completely adequate knowledge be gained. No better example can be found to illustrate the importance between fundamentals and application than exists in this new coating development; neither a knowledge of the fundamentals nor experience in application appear at this time to be capable independently of offering a satisfactory solution to the numerous problems that arise. It would appear, however, that the fundamentals should come first.

Formation Problems on Cylinder Machines*

By Philip H. Goldsmith[1]

Abstract

A discussion and description of several equipment installations are given which permitted increased production and improved formation.

Prior to the development of the stream-flow vat system, cylinder machines had not kept up with the times. Papermakers have known their problem. They have known the need of different vat circles for different speeds, stocks and products. They have known that a smooth approach flow is the essential first step for good formation. They have known that thorough mixing and air removal as well as steady feed are necessary. But, strangely enough, no machine on the market combined these essential features.

The interest and cooperation offered by the paper industry was immediate and enthusiastic. Paper is made by paper machines — not by blueprints. For a new type of machine to actually benefit the industry it must be bought and operated. Major developments therefore depend upon operators and executives who are familiar with the shortcomings of old equipment and recognize the changes necessary to obtain more profitable operation.

The First Stream-Flow Vats

Robert Nivison, Manager of Mills of the Hollingsworth & Whitney Co., has had a life-long and intimate contact with cylinder as well as Fourdrinier operations. He saw in the stream-flow vat the answer to many of his cylinder machine problems. The first installation anywhere started operation in January, 1940, at the Waterville mill of the above company. It consists of four vats 48 inches diameter by 134 inches face and four upflow headboxes.

The vat has an outer vat circle which serves as a final approach pass before the making board. The inner vat circle is independently adjustable at front, bottom and back. This is the first practical vat which permits establishing the ideal relation between stock flow and mold speed. The whole construction is rugged and simple.

The upflow headbox consists of an inner cone in which the flow rises and an outer cone, the bottom of which connects to the underfeed pipe. It is the simplest form of a 2-pass headbox with a maximum dam length and surface area. It is introduced between the pump and the vat to permit air to escape and to absorb any irregularities in flow.

The Waterville installation took the place of the Fourdrinier part on an existing machine. The previous cylinder machine at the Gardiner mill of the company was dismantled. As is often the case with new developments, definite limits were naturally placed on cost for this initial installation. Pumps and piping were furnished by the mill. Inlet hoppers were selected instead of flow spreaders. It was the first of its kind and far in advance of anything which had previously existed.

It is of interest that most of the operators were Fourdrinier men without previous cylinder machine experience. Nevertheless the machine was started up in a smooth manner. The first sheet to come over showed the uniform and even look-through which is typical of stream-flow formation. Operating speeds at the start were about double those previously attained with the old cylinder machine at the Gardiner mill even though the Gardiner speeds were comparable with other operations making equally high-grade products. Orders from 76 to over 300 pounds (24x36x480) were run on the four vats. The sheet was level, the tests were up. At double the speed it was found possible to cross the fibers to a much greater extent than formerly. Another stream-flow wet end was ordered by the same concern for their new mill at Mobile, Ala.

First Stream-Flow System on Ninepoint

The Mead Corporation decided that a stream-flow system could improve the formation of 0.009 inch chestnut which is an unusually difficult stock to handle. A system was consequently ordered for their Harriman, Tennessee, mill. This unit has a stream-flow vat with a mold 60 inches diameter by 150 inch face. The system also includes an upflow headbox, a flow spreader and a flow mixer. The development of the new adjustable-flow pump was not yet complete, so an old centrifugal pump was used. The piping was furnished by the mill.

The flow spreader has a gradually spreading flow passage with no obstructions. It is basically a properly designed hydraulic nozzle which receives the thoroughly mixed stock from the single underfeed pipe with a circular cross section and delivers it to the vat inlet with the same consistency and flow velocity at every point across the full width of the machine.

The flow mixer resembles a venturi in appearance but is used for intimate mixing of the various parts of the flow in the constricted throat where no air can be entrained.

The vat part in use previously was already an improvement over the old type counterflow vat. It did not, however, permit acceptable formation over 320 feet per minute. The stock had to be very slow, large amounts of fresh water make-up were necessary and an excessive amount of fines was spilled to the sewer. The average weight variation across the machine was 4 for 26 pounds per 1000 square feet basis weight.

The system started operation in September, 1940. The formation bottle-neck was gone. A superior sheet now runs at 400 feet per minute. With improvements in drying and stock capacity further increases are in prospect. The stock is now much

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] Member TAPPI, Development Engineer, The Pusey and Jones Corporation, Wilmington, Del.

freer which makes a better sheet, permits the drying of more paper, reduces stock preparation power, etc. Less make-up water is used, sewer losses are less. The sheet is automatically level within close limits. The operators quickly turned the advantages of the machine into profits for their company.

Ninepoint, whether from chestnut, straw or other stock, requires high tonnage operation and many mills in this line of business are limited in quality and production by formation. The Harriman installation indicates what the stream-flow vat system can accomplish for such operations.

A Repeat Order

The Hollingsworth and Whitney acquired a used cylinder machine for their new Mobile mill. They knew that the old style vats with which the machine was equipped were now antiquated. For quality and variety of products the cylinder part is the controlling factor and must be the best obtainable.

More latitude was allowed this time than for the Waterville job and in fact some improvements were worked out in collaboration with Messrs. Robert and William Nivison. The old, cheaper construction of a single casting for the vat ends was discarded in favor of sectional construction which permits the vat ends to be made more suitable for their several functions. The simple rack and pinion arrangement for the circle adjustments is completely enclosed. The circulating dam is adjustable from one side of the machine like the vat circle adjustments, making all adjustments quick and fool-proof. At the suggestion of Hardy S. Ferguson, consulting engineer, the top of the outer cones of the upflows was made virtical thereby saving space. A much improved all-metal couch slice was developed with the help of William Nivison. On the basis of tests made at Waterville the inlet hoppers were specified much longer than in the former case with a more gradual angle of spread than the Waterville hoppers but not as gradual an angle as standard flow spreaders. The pumps and piping were again furnished by the mill. The layout arrived at by the mill is an unusual one, the screens being located in the basement. This wet end consists of four stream-flow vats 48 inches diameter by 124-inch face with four upflow headboxes.

Operation started on kraft pulp in November, 1940, the third installation to start up in the year. The formation of very free stock and heavy loads was again as excellent as on other products. Pulp operations generally can use a wet end which produces such a uniform sheet of very free stock at high production rates. This stream-flow wet end is in a strategic location and has the necessary flexibility to form a superior sheet of any products which the market may require. In fact excellent sample orders have already been made of manilas, tags, white tags, indexes, bristols and folder stocks.

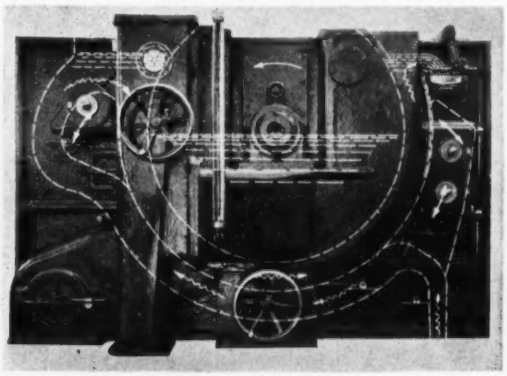


FIG. 1
Stream-Flow Vat

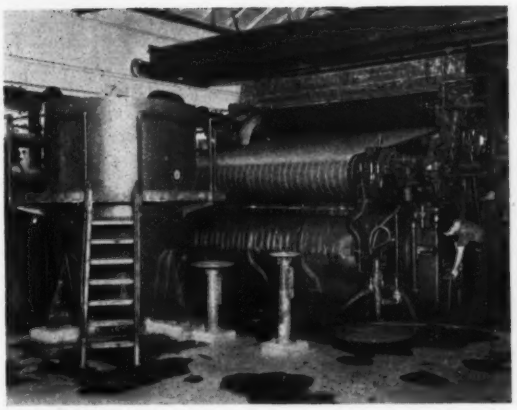


FIG. 2
Up-Flow Head Box

Another Difficult Formation Job

We have looked for the toughest formation jobs in the belief that they are the best proof of the profits which can be earned under average conditions. The first installations cover among them a very wide range of products.

The Union Mills Paper Manufacturing Co. makes a large variety of high-grade kraft and rope sheets for special purposes and have a long established reputation for quality in their field. Ralph G. Simonton, an operating executive with thorough experience in the game, knew where and why his machines were limited. The stream-flow vat system was what he had been looking for. He and F. R. White, president, saw the profit possibilities and the construction of another stream-flow wet end got under way.

It consists of three stream-flow vat systems with molds 48 inches diameter by 90-inch face, upflows and flow spreaders. The vats are equipped with telescopic spill gates which permit the level inside the mold to be lowered to any point desired without deep spill chambers. The customer specified complete corrosion-proofing and after a thorough investigation rubber lining was chosen which maintains smooth flow surfaces and makes washup easy. Mr. Simonton selected the new adjustable-flow vat pumps in preference to centrifugal pumps with valve control. The capacity of the adjustable-flow pump is varied by changing the pitch of the impeller vanes on the same principle as the feathering airplane propeller and the Kaplan water turbine which have been in use for years. The flow obstruction of the valve is eliminated and power is materially reduced. The pump is vertical and occupies no more space than does the pipe. The motor is above the pump and therefore better protected. The adjusting wheel is on the operating floor. All of these improvements became standard on all subsequent jobs.

The vats replaced were equal to any obtainable before the dav of the stream-flow system. However, thev limited the machine far below the old driving and drying capacity. Since the stream-flow wet end

started operation in February, 1941, all grades have been running at top driving and drying speeds. This represents production increases up to 33% for the most difficult grades. The driving speed is now being doubled and 50% more driers are under construction — and this in a mill where speed was always guarded against to preserve quality. The formation at higher speeds is far superior to the old formation at lower speeds. Once again the formation bottle-neck was broken wide open.

This installation may be said to have ended the development period. All orders since have been for standard complete units. Actual operating results had been conclusive enough to satisfy even the most cautious or skeptical.

First Stream-Flow System on Roofing

Although not one of the largest branches of the industry the formation of felt is of exceptional interest both technically and profit-wise. High tonnage of extremely coarse stock must be formed over a very wide range of sheet weights and machine speeds. The necessities and opportunities for furnish savings are peremptory. Uniform weights are important. Large profit opportunities are available to the mill which can form superior felt at higher speeds with cheaper furnish.

The first stream-flow system for roofing is at this time of writing under process of erection at the New Orleans mill of the Flintkote Company. It consists of a stream-flow vat with a mold 60 inches diameter by 92-inch face, a flow spreader, and upflow headbox, a flow mixer, an adjustable-flow pump and all the main piping. The whole system is rubber lined to prevent pitting and preserve smooth flow surfaces.

Another Endorsement

An interesting sidelight on the industry's response to this effort has been the character of the concerns who have been the first to endorse the development. Without exception they are conservative organizations who do not try doubtful things.

The Crocker Burbank and Co. Assoc. have indicated their approval by ordering a stream-flow wet end consisting of four systems with molds 48 inches diameter by 104-inch face. This concern carrying one of the oldest papermaking names in this country would not have ordered this equipment if their experience had not proven to them the soundness of the design.

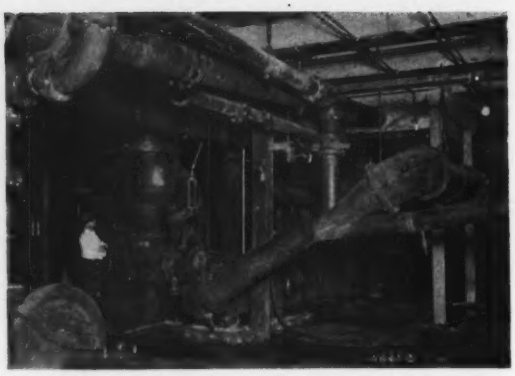


FIG. 4
Flow-Mixer

Boxboard operations require a combination of quality, large production and great flexibility. It is one of the most important branches of the paper industry both as regards tonnage and value of product. A large number of different grades are made requiring a very wide range of sheet weights, machine speeds and stocks. This branch of the industry should therefore benefit as much if not more than any other group from higher quality, greater flexibility and lower operating cost of stream-flow formation. In addition to better quality and much higher speeds other important benefits result where several different stocks are used such as reduction in liner pointages, furnish, substitutions, etc.

One boxboard mill has under construction three stream-flow vat systems with molds 48 inches diameter by 106-inch face for use in the top liner, under liner and back liner positions. Four of the old vats with smaller molds will be retained as filler vats to be replaced at a future date by stream-flow vat systems. This contract included stream-flow vats, upflows, flow spreaders, adjustable-flow pumps and all the main piping. The flow surfaces are rubber lined. In short the equipment comprises three complete systems of our standard construction.

Doing the job in several steps will often fit the budget better and is therefore well worth considering in many cases. The greatest overall economy and the quickest return on the investment can however usually be obtained by replacing all the old vats at one

FIG. 3
Three Flow-Spreaders on Multi-Cylinder Machine

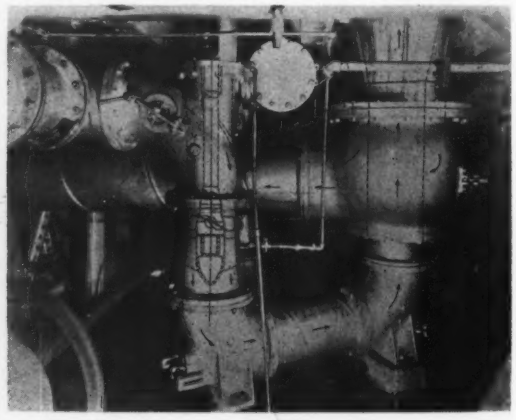


FIG. 5
Adjustable-Flow Pump

time. Another contract is on the books covering the same number of units for another boxboard machine.

The Old Makes Way for the New

Old ideas die hard. The cylinder machine has long been cheaply constructed. Cylinder products appeared to many executives like cheaper papers than Fourdrinier papers. A box with a cylinder mold in it was considered a vat and what it couldn't accomplish was beyond the realm of the cylinder machine.

Today this is changed. Efficient equipment is available and present-day mills must either progress or die a lingering death. It is now appreciated that each vat system is an individual forming machine and must be designed with the same thought and care as a Fourdrinier part.

Frothing of Coating Mixtures*

By E. Sutermeister[1]

Abstract

The chief cause of foam is the adhesive used in the coating mixture. The effect of alkali, temperature, pigments, etc. on the prevalence and quantity of foam is discussed.

The surface of a coated paper sometimes shows a defect which is known as "froth pits" or "pin holes". These are really small craters which were originally occupied by air bubbles which did not break until the coating had so nearly dried that it was no longer fluid enough to fill the spaces. If these pits are large or numerous they interfere with the printing of the paper by breaking the contour of the halftone dots and making the print appear gray. It is really surprising how seriously this affects the appearance of the cuts, especially in the light and middle tones; it is not so bad in the dark tones as the ink is usually squeezed into the pits so that they do not show. Measurements of froth pits show that they vary from very small up to 0.064 mm. in diameter, while the high light dots from a 133-line halftone are about 0.074 mm. It is possible therefore for a large froth pit to prevent nearly nine tenths of the dot from printing, and when the pits group themselves along the lines followed by the bristles of the brushes the effect is especially bad.

Origin of Froth Pits

Froth pits must necessarily originate in the coating mixture, so this is the place to study their formation and cure. It is common knowledge that froth in coating mixtures is of two kinds, a coarse froth on top and a fine froth which is thoroughly emulsified in the body of the coating mixture. The coarse froth is easily prevented from reaching the coater to a troublesome degree, so the problem of control comes down to that of how to prevent or cure the finely emulsified kind.

Difficult to Get Positive Proof

There is little definite information regarding the frothing of coating mixtures because it has proved so difficult to get positive proof of any alleged facts. The trouble often comes and goes without any change in operations having been made, and when corrective measures are taken it is never certain that the material used affected the cure or whether the froth was just ready to disappear anyway.

The chief cause of frothing in white or slightly tinted coatings seems to be the adhesive used in the mixture. In heavily colored ones it is quite possible that the colors or dyes used may be a contributing factor. Of the adhesives used, casein is an excellent emulsifying agent and is apt to cause foam; glue is very likely to cause trouble of this sort, but as it is seldom used it need not be considered in such studies. Starch is a much less effective emulsifying agent, and coating mixtures in which starch is the sole adhesive almost never give trouble from froth pits. Recently a paper was called to our attention in which a starch coating showed many pits, but this is so exceptional that some other reason than starch is suspected.

Studies by Dept. of Agriculture

Studies by members of the Department of Agriculture have indicated that the foaming of clay-casein coating mixtures may be caused by some unknown characteristic of the milk used in making the casein, by too rapid agitation or a temperature below 95 deg. F. during its precipitation or by insufficient washing of the curd before drying. They have found that mixing even a small portion of a nonfoaming casein with one of high-foaming tendency prevents foaming of the mixture. This would seem to be an excellent argument for mixing different lots of casein in order to obtain a large supply of a uniform mixture, but in order to be effective, according to the claims, it must be certain that a sufficient proportion is of the nonfoaming variety.

Use of Alkali as Solvent

Since the paper coater has little control over the methods by which his casein is prepared, it is up to him to do what he can to prevent or minimize foam. It is often claimed that the use of too much alkali in dissolving the casein tends to cause foam. This belief probably dates from the earlier times when large amounts of alkali were used and there was a greater tendency to break down the casein structure by drastic treatments. Under present conditions, using less alkali and lower temperatures, it is doubtful whether the amount used is a controlling factor. Moreover, it is not always possible to separate the evidence regarding the amount of alkali from that relating to the kind used. To be comparable the solutions should be prepared so that there is no greater excess of alkali in one than the other, but as this is seldom done there is always some doubt as to whether the effect is due to the kind or the amount used.

One of the casein solvents which is open to suspicion, yet which seems to give generally satisfactory results, is soda ash. It is customary to use 12 to 16% of this, which is about three times the amount necessary to dissolve the casein completely. If only slightly more than the theoretical amount is used the casein solution foams tremendously, but with the larger amounts no foaming occurs. This may be because the

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] Member TAPPI, Chief Chemist, S. D. Warren Co., Cumberland Mills, Me.

carbon dioxide is absorbed by the excess of soda ash with the formation of bicarbonate which does not break down at the temperatures of coating and drying.

Effect of Pigments

The effect of the different pigments used in coatings is open to question and no definite statements can be made. It seems established that coating mixtures with considerable satin white foam more than others, but since such mixtures require much more casein, and this is dissolved with considerably more alkali than for clay coats, there is again doubt as to what causes the foam. Since a mixture of clay, satin white, and water does not foam, it must be assumed that it is the influence of the satin white on the casein which causes the trouble.

Agitation and Air in Coating Mixture

Even if the paper coater can do little by adjusting the casein, pigment, or alkali, there are still two things he can do to minimize foam. These are to avoid violent mechanical agitation of a nature to whip air into the mixture and to use some antifoaming agent which makes the small bubbles break more rapidly either in the mixture or after it is spread on the paper.

There is no question that emulsification of air is aided by agitation. This may take place in the coating mixers, at the screens, in centrifugal pumps, wherever the mixture discharges from a pipe and drops freely into a tank or even at the squeeze rolls of a double coater. One case was noted where running the squeeze rolls idle for about 10 minutes caused a very fluid mixture to become as thick as heavy cream; instead of flowing back from the nip of the rolls it collected and then fell back in great gobs. In another case a small supply tank, into which the coating mixture fell from a distance of about a foot, appeared to be nearly full, but when a little antifrothing oil was added the foam subsided and the mixture present was found to be only a few inches in depth. Avoidance of all such chances for mechanical mixing in of air is important and is certainly within the control of the coater.

The only other thing which can be done is to use some antifoaming material in the coating mixture. There are many such substances on the market under all sorts of trade names and at all sorts of prices. The materials going into these are seldom known to the coater, and it would probably do him no good if they were. On the other hand there are many substances which are sold under their common names and which are easily recognizable. Among such things are skim milk, amyl alcohol, gasoline, toluene, pine oil, Turkey red oil, petroleum ether, oil of cloves, and many others. Unfortunately it is not possible to give any directions for their use or to say how much is necessary. It is not even possible to recommend any particular one, for experience has shown that one which may work well in one plant may be quite useless in another.

Worse yet, it is not possible to make a short mill trial and get any reliable information. At best such a trial must be timed to take place when bad frothing is occuring, and this is seldom easy to do. If the test is made under ordinary running conditions there is always the question whether the mixture would foam if no agent was used. It is probably often true that antifoaming agents could be omitted over considerable periods of time, but that they are used as insurance against possible trouble which may develop suddenly. The only way to make satisfactory mill trials is to keep careful records while running normally, and then switch to the new material for a period of months and see whether froth pits are more or less numerous.

A satisfactory method for testing such agents in the laboratory consists in agitating the coating mixture in a standard manner and then finding the weight of a definite volume before the froth has a chance to separate. The greater the volume occupied by air the lower the weight, which gives a direct measure of foaming tendencies. By adding different agents in different amounts to the same basic coating mixture this method enables the relative efficiencies of antifrothing agents to be established with reasonable certainty.

Acid Packings for Sulphite Mills

The development of a new series of plastic and flexible metallic packings for centrifugal pumps handling sulphuric or sulphurous acids and calcium bisulphite cooking liquors used in the production of sulphite pulp is announced by Johns-Manville. According to service reports received by the company from mills in many sections of the country, these packing combinations are giving continuing excellent service.

The plastic packing, Style No. 640, is made from blue African asbestos fiber, non-abrasive metals, suitable lubricants, and an acid-resisting binder. It is furnished in both ring and coil forms.

The flexible metallic packing Style No. 379, is made for acid service by braiding lead alloy ribbons over a core of blue African asbestos, after which it is thoroughly lubricated with suitable lubricants. This material is furnished in both ring and spiral forms.

The flexible metallic packing is designed specifically for use as header and follower rings in combination with the plastic rings where service requirements or condition of equipment dictates its use.

One Pacific Northwest pulp producer reports excellent service on centrifugal pumps circulating cooking acid at 110 lb. pressure and 275 deg. F. temperature with very little if any shaft or sleeve wear. Another reports greatly increased packing life on pumps at 90 lb. pressure and 275 deg. F., while inspection showed no scoring and only a minimum of wear on shafts and sleeves. Reports from the Wisconsin area and chemical plants in the East tell of improved service and longer packing life on both cold and hot acids to 300 deg. F. with the new packing combination.

Canadian sulphite pulp producers report definitely better packing performance and increased life on 1800 rpm centrifugals handling calcium bisulphite cooking liquors at 90 lb. pressure and approximately 290 deg. F. Maximum life of shafts and sleeves is indicated. Full information on these new packings may be secured from Johns-Manville, 22 East 40th street, New York, N. Y.

Temple Now with Downingtown

R. U. Temple, formerly mill superintendent of the Ruberoid Company, Gloucester City, N. J., has recently joined the Downingtown Manufacturing Company as a sales engineer. He will spend most of his time calling on the felt mills and others supplying material to the building trades.

Sandy Hill Bertrams Flow Distributor Control of Approach Flow to the Fourdrinier*

By Allen A. Lowe[1]

Abstract

A description and discussion of the flow to the Fourdrinier wire is given.

The problem of delivery of fiber in suspension to the slice involves the following factors.

The degree of dilution, and hence the gallonage which must pass through the headbox, is determined by conditions inherent in the kind and character of the fiber, and in the conditions which lie beyond the slice on the Fourdrinier forming table.

The character of the fiber may range from a kraft stock with little beating, to a sulphite stock very thoroughly beaten, as for glassine. The factors lying beyond the slice include the speed of the machine, the mesh of the wire, the length of the forming table, the shake, as well as the weight and requirements of the sheet being made.

The papermaker adjusts all these factors in relation to each other as far as the circumstances permit, and in relation to them, suspends his fiber in amounts of water varying greatly, often on the same machine, and certainly over the whole range of different kinds of papers. It has been our experience with actual installations that headbox consistencies, on different machines of course, range from 0.2 to 1.25%. On one machine we have been confronted with a range going from 0.3 to 1%.

Regardless of the consistency and resultant gallonage passing out under the slice, it is required of the headbox that it pass and control this gallonage to the best advantage of the papermaker. It must handle as much, or as little, as the varying factors cited require. The gallonage cannot be adjusted to favor the headbox.

The headbox must work in combination with one of the types of slices now in use. These vary from the jack-knife straight slice, to the high-pressure stock inlet of the Van de Carr, or Voith type, and similar devices.

The headbox must maintain the thoroughness of the mixture of fiber and water, regardless of the consistency of the mixture. This is not a great problem with fibers which do not floc—form bundles—readily. But some kinds of fiber have in a high degree, a tendency to floc and sometimes this tendency is increased by the way the fiber has to be prepared to suit the requirements of the paper being made. To overcome this tendency, there must be maintained in the approach flow to the slice, a turbulence which will keep the individual fiber floating each by itself as much as possible.

Another reason for a need for turbulence in the approach flow is filler. Ordinarily clay fillers are likely to settle out if the approach flow becomes too slow, and special fillers like calcium carbonate are even more likely to separate from the fiber bearing mixture.

In the standard method of controlling the approach flow to the slice as one big current, the solution of the principal problems has promptly produced another. When even distribution has been secured by slowing the flow down in the pond ahead of the slice, the quietness has permitted flocing of the fibers and settling of filler. The best control of one big current was only a compromise, and an unsatisfactory one.

W. G. MacNaughton's Comments

W. G. MacNaughton *(1)* of the Newsprint Service Bureau, speaking in comment on a paper on the cure of flocing at the 1940 Fall Meeting of the Technical Association of the Pulp and Paper Industry, gave an excellent summary of the efforts to solve the problem of approach flow to the slice.

"It has been found, I think almost conclusively, that to shorten the time between the delivery of the pulp from the screens to the wire, and maintain the suspension in what they call a live condition, has practically removed the difficulties of flocculation and poor formation. In the development of high-speed paper machines, the progress of headbox development was on the idea that the faster the machine went, and the more suspension was used, the longer time was necessary between the screens and the slice. But with the most modern machines, that has been found to be absolutely wrong. And yet, even in the single-pass headbox, which might not have more than 10 feet distance between the screens and the slice, there is considerable flocculation obtained.

"This was indicated to me in a study I made of the headbox construction of practically all of the newsprint machines in North America, as well as many in Europe. The difficulties were attempted to be obviated by the introductoin in the headbox of a variety of interference devices—perforated plates; rotating, perforated rolls; tube racks; and flow eveners—all of which reduced the cross-sectional area of the flowbox at those points, and by inducing a speeding up of the flow and the turbulence at each point, had the practical effect of dispersing the fiber to an extent. In some cases, I do not think the operators really knew whether the mechanism was successful, but in many cases it was successful. In other cases, by trial and error, other interference devices were used, which probably more or less helped to maintain the dispersion.

"It is good research to know that the cause of flocculation is due to a water film on the fiber, and an electrical charge on the fibers; also, that under certain conditions, the addition of a material to the

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] Field Engineer, Sandy Hill Iron & Brass Works, Hudson Falls, N. Y.

stock would maintain dispersion. But under practical conditions, I am inclined to believe, that a mechanical arrangement based on the application of engineering principles, hydraulics and physics to the water suspension, would correct the flocculation difficulties."

Mr. MacNaughton spoke particularly of the curing of flocculation difficulties, but this problem goes hand in hand with that of even dispersion of the fibers across the width of the machine as the stock flows out under the slice.

We believe, that abandoning the attempt to control the one big current as to distribution and speed, and substituting the multiple manifold method, has solved both problems; that of even dispersion across the sheet, and that of floccing of fibers and settling of filler, which go hand in hand.

Multimanifold Distributor

The multiple manifold method is the principal incorporated in the Sandy Hill Bertrams flow distributor.

The entire flow of stock to be delivered to the slice is concentrated in one pipe, this flow is divided mechanically until it is delivered onto the apron board in 32 equal currents. The division is made by multiple manifold—i.e., instead of a manifold as on your car, going from one passage immediately to the final six or eight needed to go to the cylinders, the flow splits from 1 stream into 2, these 2 into 4, the 4 into 8, the eight into 16 and the 16 into 32—which discharge on to the apron board.

One feature of the approach flow is that the single entry pipe may come from any direction, and represent a combination of any number of streams dumping into the box leading to the pipe with any irregularity of spacing across the width of the machine which may occur.

Another feature of the approach flow is the elimination of the trapping of air. On many paper machines employing the one big current type of headbox, there may be noted cascading of the stock as it leaves the screens, and often as it pours over baffles in the flow. All this has been eliminated in the approach flow to the distributor.

All the stock which is to be passed through the flow distributor is accumulated in the box ahead of the pear-shaped plug valve. The passage controlled by the pear-shaped plug valve is choked until there is no sign of a whirlpool or cavitation above the valve, and therefore no air is trapped.

To return to the manifold passages. The reason for the even distribution of the stock across the width of the machine should be obvious. The reason for the maintenance of a thorough mixture should be equally obvious. The design of the size of the passages is such, that the speed of the stock through them maintains a turbulence which insures the maintenance of the mixture. The blocks which form the passages are so designed, and machines, and ground as to insure that the enforced division of the flow is just as exact as is physically possible.

Every fiber travels exactly the same distance from the inlet to the distributor, to the discharge, to the apron board. Each fiber is therefore under the control of the same turbulent action at all times in its passage through the distributor. No part of the whole flow has an opportunity to get itself into a pocket where it can linger and floc.

Among the considerations which determine the selection of a speed of flow through the passages is that of scouring speed. In other words, there are no accumulations on the walls of the passages, no lumps. This is due to that element in our design which may be called scouring speed. It keeps the passages clean.

There is little to the device except passages, which naturally means passage walls. The materials with which the distributor is built, preclude to a great degree, accumulations of stock. These materials are high-grade mahogany for two sides of the passages, and rubber on the other two. As a matter of fact, we have built two of these distributors with mahogany blocks, and neither of these installations has developed any lodgements. There are no lumps.

Our present design of the blocks forming the passages employs precisely-machined cast iron blocks which are covered with rubber, finished to a close tolerance. In designing the passages in the distributor, we first investigate very thoroughly the amount of flow required by the particular installation. As all hydraulic determinations are subject to error and difficult to check, we determine the rate of flow required by the machine under consideration by every possible means, and with as much exactness as we possibly can.

One excellent check, where the pump supplying the screens is fairly new and the characteristic curves are obtainable, is the determination by gages ahead of, and following the pump, the discharge to the screens. However, in changing from the standard type of headbox to the flow distributor, a number of showers can usually be eliminated. Thus, the amount of water added to the flow by showers must be taken into consideration, in addition to what is pumped to the screens. This shower water is part of what the papermaker finally has on his forming table on the Fourdrinier. He will, in using the flow distributor, compensate for the loss of shower water by adding more white water as make-up water, and all this will pass through the flow distributor. In some standard headboxes the amount of shower water added is quite impressive, not to say appalling. Under such conditions, after the pumped gallonage has been determined, the gallonage added by showers must be determined.

Another method of determining the flow under the slice, which is what must pass through the flow distributor, is from the relation between headbox consistency and tray water consistency. This is about in accordance with the method given in the Technical Association's data book (TAPPI Data Sheets) (*2*) and is reasonably accurate. Finally, we like to determine, particularly on the order, on a given machine, which appears from other calculations to require the greatest gallonage through the flow distributor, the exact flow under the slice.

We determine the depth in the pond ahead of a shutdown, and after the shutdown calibrate the slice opening. Different types of slices require different constants to determine the flow from what amounts to a submerged orifice, but the results check very closely with other methods, and have proven successful when the distributors built from the calculations have been put into service.

Air is eliminated from the approach flow to the distributor and the passages are very precisely built to bring out onto the apron board, 32 exactly equal flows, carrying as nearly as is physically possible, equal amounts of thoroughly dispersed fiber.

Our experience with this distributor over a number of successful installations, has led us to specify a

pond length which is satisfactory. The factors taken into consideration here, are making the pond long enough to enable the 32 currents to merge satisfactorily; making it short enough, especially in the case of heavily loaded papers, so that the dispersion of the filler will be maintained; and also keeping the pond short enough so that there will be no tendency for slowly shifting eddies to form.

Operating Experiences

It has been the experience of those papermakers who have studied their conventional headboxes carefully, that in spite of the utmost care, the slowly shifting eddy is nearly impossible to eliminate. The interference devices referred to by Mr. MacNaughton, did a great deal for the one big current control, but they never overcame the eddy which shifted slowly from one side of the conventional headbox to the other.

The effort of this slow shift is often apparent on every reel. First, the front side is heavy and then the back side, and the machine tender plays with his slice too often in a vain effort to control the weight across the sheet. This slow shift has been eliminated by the flow distributor.

I have been in the mill in the cases of two of our installations, when at my request the machine operators set their slices on starting up, and ran for 24 hours, making entirely satisfactory merchantable paper, without adjusting the slice once.

As far as our present experience goes, the following grades and weights have been made on machines equipped with the Bertram flow distributor.

These are: toilet tissue from 9 to 13 pounds basis weight, made at speeds up to 600 feet. The limitation in speed is due to limited capacity on other parts of the machine such as drive, presses and driers. Another machine is making waxing tissue with a wide range of speeds and weights. Another machine is making newsprint, telephone book, poster, and other similar groundwood papers at weights up to sixty-four pounds basis, and at speeds up to eight hundred feet per minute.

Groundwood specialties are being made on another machine. These range from imitation bristols at basis weights of two hundred pounds and paper speeds of one hundred feet, to bond paper at thirty pound basis weight and six hundred feet paper speed.

Sulphite specialties are being made on a recent installation as well as on the groundwood specialty machine just mentioned. The capacity for improvement in quality, weights and speeds on this last installation has not been learned.

Waterleaf and absorbent papers have been made at basis weights ranging from eighteen pounds to one hundred fifty pounds, and at speeds ranging from fifty feet per minute to five hundred feet.

Another machine is making book and offset at forty pound basis weight and five hundred feet per minute.

One machine is using the flow distributor successfully on such a wide range of weights and grades as sulphite index, sulphite envelope, and kraft envelope. The speeds here range from seventy-five feet per minute to four hundred feet, and the weights from seventeen pound to eighty-two pound, folio basis.

Naturally, satisfying these conditions sometimes involves handling in the same distributor, on a single machine, a wide range of consistencies and gallonages. While the distributor must be built to pass, at a satisfactory speed of discharge to the apron board, the greatest gallonage which the papermaking requirements are likely to demand, study must also be given to the rate of flow which will occur when the gallonage is low.

We have, after careful study of the character of the fiber and the probability of floccing, been able so to design the distributors already in service, that they handle high and low gallonages and consistencies on the same machine with the same satisfactory result in control of delivery to the slice.

The highest consistency we have encountered so far, has been slightly over one percent in the headbox. The lowest consistency has been 0.2%. This of course, is not on the same machine. But we have information which would indicate that one machine is running from 0.5 to 0.9% through the distributor with a range of gallonage from 900 to 2000 gallons per minute. There is no limit to the gallons per minute for which the distributor may be designed; nor is there, considering practice over the whole field of papermaking, any existing range of gallonage on one machine which the flow distributor cannot handle.

Our preoccupation with Fourdrinier installations has delayed somewhat, the application of the flow distributor to cylinder machines. We have erected in our shop, a vat designed to make impregnating feet which embodies the flow distributor. This particular distributor is designed to pass 10,000 gallons per minute. The results from this are awaited with interest. But the flow distributor should be of greater interest to the multiple cylinder machine operator, than it is to the Fourdrinier man. While the Fourdrinier operator was engaged in building his bigger and bigger one big flow headboxes, he could knock out the end of the mill if he needed to.

The cylinder machine operator is confined to a small distance at one end of his vat for flow control. In the space available, he could now install a flow distributor on each vat, and get the best flow control enjoyed by the Fourdrinier operator.

Conclusions

We feel that the following papermaking problems have been in a great measure, solved by the use of the flow distributor.

1. Reduction of the effect on the sheet of multiple screens.
2. Elimination of the effect of the direction from which the approach flow comes.
3. Reduction of "slugs" from headbox deposits.
4. Improvement of the maintenance of dispersion of the fibers in the flow to the slice. In other words, maintenance of a good mixture.
5. Reduction of "shifting" of the sheet.
6. Reduction of streaks.
7. Improvement of conditions causing cockle.
8. Improvement of conditions causing curl.
9. Reduction of variation of weight across the sheet.

We believe that results in our nine installations have proven our contention; that controlled distribution at a relatively rapid rate of discharge close to the slice, eliminates the uncontrollable eddies of the one big current box, and leaves no room for the formation of further eddies before discharge to the wire.

Mr. MacNaughton says, "I am inclined to believe that a mechanical arrangement based on the application of engineering principles, hydraulics and physics to the water suspension would correct the difficulties". The flow distributor satisfies his specification in principle and has proven itself in practice.

References

(1) MacNaughton, W. G. Tech. Assoc. Papers 24:507, 651 (June, 1941).
(2) TAPPI Data Sheets, New York, Technical Association of the Pulp and Paper Industry. 154 pp.

A New Means for Deinking and Reclaiming Pulp*

By Theodore P. Steinmetz [1]

Abstract

This new means for reclaiming pulp is a method for defibering waste paper in an alkaline medium solely by the use of internal friction so that ink and other materials added to the stock may be removed and the original fiber reclaimed in an undamaged state. It differs from previous systems not only in the method pursued to reclaim fiber, but in results achieved. Physical and chemical characteristics of the fiber are unchanged by the processing. Consequently, the product can be used as all or a large proportion of the beater furnish just as if it were new pulp.

Methods for reclaiming fiber from printed waste paper are generally known as deinking systems. These include either cooking waste paper in sodium hydroxide liquor or defibering in pulpers or beaters using either hot or cold alkaline solution with subsequent refining, bleaching, washing, and screening. Pulper and beater methods are based upon the assumption that the mechanical means used to prepare fresh pulp for papermaking can likewise be applied to waste paper with the addition of a chemical detergent mixture which will saponify or emulsify the oil base of printers ink while stock is being defibered and that such foreign matter could then be washed out and the stock bleached. Provided care is used in sorting the waste paper, it is possible to secure pulp having a brightness of 80 by such means. However, the stock produced can be used only as a small percentage of the beater furnish because of its greatly diminished strength. The principal weakness in these various systems has not been chemical, but the fact that waste paper is made from fiber that had received proper refining treatment. A repetition of such treatment results in considerable fiber damage in addition to overbeating.

None of these systems are successfully applied to papers containing mechanical pulp, particularly so where heat is used or sodium hydroxide is present as part of the detergent mixture. The treatment in pulpers and beaters of stock printed with carbon black inks, results in minute carbon particles being deposited within the fibers. Similar particles are firmly affixed to the fiber. No amount of washing will entirely free such carbon from the stock and whereas bleaching can be used successfully on other colors, it can not be used on carbon black. Hence the pulp has a gray color. The usual washing methods will also not completely wash out that ink which has been freed from the fiber due to the tendency of such freed substances to float. Customary washing drives part of the ink and color into the pulp mass.

Basis of New Means of Deinking

The Norwood system for reclaiming pulp is based upon considerations that the problem is essentially mechanical in two respects. First, the method of disintegrating waste paper into suspended fiber must be such that the fiber is undamaged. Second, the mechanical means for washing must take advantage of the fact that the materials to be removed are lighter in gravity than the cellulose fiber.

Discussing first the method of defibering, considerable experimental work proved that established physical laws of mechanics could be coordinated in such a way that they become a means for defibering waste paper or any other fibrous material wherein the fibers are *not woven,* but are matted together such as is the case with paper and pulp, irrespective of whether or not a bond is used, and without loss in strength. These mechanical principles may be briefly summarized as follows:

1. The coefficient of sliding friction is greater between like than unlike substances. Hence it is greater between particles of paper than between paper and anything else.
2. Such coefficient varies directly with the pressure of paper against paper. Hence the higher the consistency, the greater the friction.
3. It is greater between moist particles of paper than dry particles due to fiber swelling.

The application of these principles involves merely the rubbing against itself of moist paper stock at high consistencies. If dry paper were so treated, it would wear away, ruining the fiber. At the same time, the friction would not be as great between dry particles as between moist. However, it was found that if the bond between the fibers were weakened so that the adhesion between fibers is less than the force applied by rubbing the paper together, the paper stock would separate into individual fibers without fiber damage. The best results are obtained in weakening the bond by soaking paper in an alkaline solution. Then mechanically, using friction only, a greater force than the weakened bond is applied and the paper breaks down. The alkaline solution not only weakens the bond so as to hasten the defibering action, but at the same time moistens the stock resulting in greater frictional resistance. It was found that a slow application of force eliminates driving of particles into fiber.

Several different machines were designed and tested in order to ascertain the most practical means for applying these mechanical principles. The unit described as the Norwood Pulp Reclaimer was found to be the most practical due to the fact that it could combine not only defibering in an alkaline medium by the use of friction only, but the stock could be washed on the same machine.

Application

It consists of a tank which at the top is surrounded by an overflow trough around its entire circumference, the side wall of the trough being greater in height than the tank top. This overflow trough carries away wash water through two drainage outlets. Driving mechanism is mounted above the tank. At the bottom center are two pipe connections. One handles drainage of solution so as to increase stock

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] President, Norwood Pulp & Machinery Co., Florence, Mass.

consistency, and the other is for the admission of wash water. Pulp discharge valve is at the side. On the side of the tank opposite the pulp discharge valve is a separate fresh water valve controlling a built-in shower head used to clean the machine and also to kill any foaming that might develop. All water and drainage valves are controlled from a platform. This tank is shown in Fig. 1.

Mounted within the tank is a heavy reinforced Fourdrinier wire-lined basket which is smaller in diameter than the inside tank diameter and extends 12 inches above tank top. This basket is the container for waste paper and pulp. Entry of water or solution to or from the basket is through the wire. Pulp discharge valve extends into the basket and is of a new design which results in the valve face forming part of the basket wall so that there are no protuberances or recesses that will collect undefibered stock. Waste paper is discharged into this basket through an intake chute located in the 12-inch extension of the basket above the tank top. Extending upward through the basket from a spider which supports the basket bottom are a series of stationary vertical fingers designed to impede motion within the basket and thereby build up friction. Extending downward from a rotating spider at the top of the basket are an opposing series of vertical rotating fingers. The spider carrying these fingers operates at only 15 r.p.m. These fingers are of teardrop design. This design results in maximum internal friction within the paper stock with the least possibility of paper clinging to them and not being defibered. In operation the rounded parts of both series of fingers oppose each other. Because of the design, a swirling motion is set up around each finger which causes them to be washed free of paper. In the event, however, that any stock does collect on these fingers, it is controlled by opening a valve which sprays them.

This spray is also used to wash out the last bit of pulp when it is withdrawn from the machine. Pulp does not collect on the inside of the wire basket due to hydrostatic pressure set up between the basket wall and the inside tank wall. The only point where the wire can clog and interfere with operation of the machine is at the point where the basket extends above the tank top. Wash water overflows into the

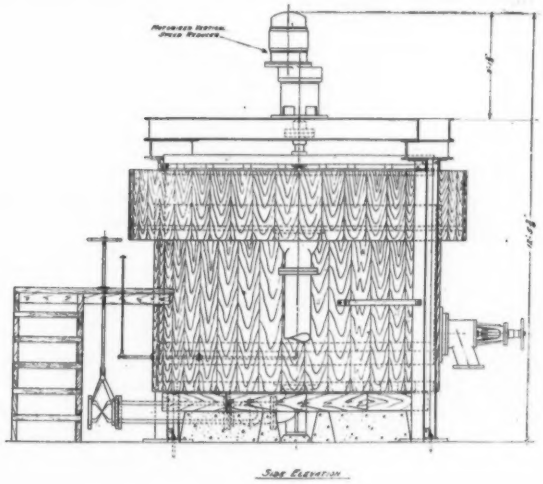


FIG. 1

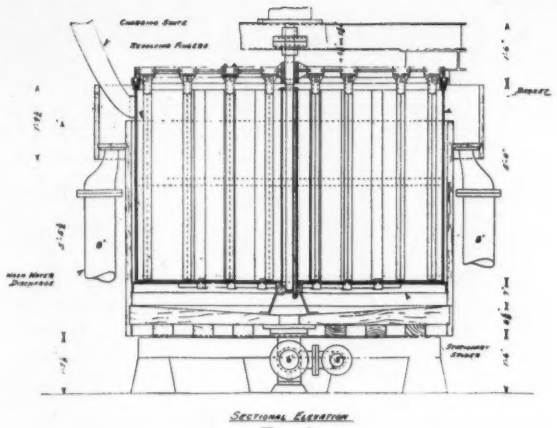


FIG. 2

trough at that point so that the pressure is outward. This difficulty is overcome by means of doctor blades which are let down into place only while pulp is being washed. The area between lower basket wall and inside tank wall is sealed so that at time of washing all wash water must pass upwards through the pulp. The description will be made clear by reference to Fig. 2 which is a sectional elevation of the entire reclaimer.

The operation of the machine is not complicated as is indicated by the following explanation of the method used.

OPERATION

The machine is charged with waste paper and an alkaline solution to a consistency of 5% in terms of pulp. The revolving members agitate this mass slowly. There is only slight friction between pieces of paper for the purpose in this initial stage is to soak the paper in order to loosen the bond between fibers, in addition to attacking the ink size and filler.

The stock is sufficiently soaked when it starts to break up even with the small amount of friction involved at 5% consistency. Friction is then raised gradually to the maximum possible by permitting the solution to drain off slowly. As the mass thickens, internal friction increases, and fiber is pulled apart because of the weakened bond between fibers. The fiber itself is not damaged or cut. Maximum friction is obtained when all solution has drained off, and the mass at the bottom has as high as 25% consistency. Disintegration is more thorough if the stock is then remoistened to about 10% consistency and immediately drained again. If this is done several times, a cycle is set up by which the internal friction is varied from low to high.

The heavier the paper, the longer it takes for a solution to penetrate to all the fiber. Hence heavier stock takes longer than light-weight stock such as news. This difference in timing is taken care of by presoaking of such stock in a special soak chest so that the reclaimer handles only defibering and washing.

After defibering is complete, the reclaimer is operated as a pulp washer. The usual washers used in pulp and paper mills are based upon the stock being picked up on a revolving cylinder composed of fine mesh wire and sprayed from shower pipes. This is excellent for washing out water soluble substances such as chemicals and bleach. However, many inks, especially carbon black, are not water soluble. Hence

washing defibered waste paper in that way tends to wash these particles into the stock as previously indicated. Those particles, being lighter in specific gravity than cellulose fiber, tend to rise to the surface. Further, reverting for a moment to physical chemistry—many substances in paper stock are emulsified, and then kept in a dispersed state by the use of protective colloids. In an emulsion, the colloidal particles are in greater concentration near the upper surface than they are throughout the balance of the medium, being lowest at the bottom.

Obviously, as everything tends for one reason or another to congregate at or near the surface, the logical washing method should be upward instead of downward. Therefore when the stock is defibered the reclaimer becomes a flotation washer by admitting water at the bottom and permitting it to overflow outwards from the top while retaining the fiber within the wire basket. Wash water is distributed evenly by the rotating members. When clean, the pulp is discharged at any desired consistency to a chest.

Many different formulas will work satisfactorily in this machine. But without it, it was found no formula will do a good job. For example, ordinary washing soda solution beaten with newspaper in a beater will defiber the stock and free a large part of the ink. If the pulp is then washed until the wash water is clear, the pulp would be dark gray. However, using this same solution in the reclaimer with news, results in good pulp free from ink. That alone shows the importance of the mechanical principles involved in the reclaimer.

Chemical Principles

Chemicals are used in this new system for three purposes:

1. To cause fast penetration of the stock.
2. Emulsify oils, rosins and waxes.
3. Deflocculate and disperse solid particles.

The main agents accomplishing the above are classed as detergents. As some things work better than others on one constituent of the paper, chemical mixtures containing something special for each problem met with are used.

The mixtures do several things as follows:

(a) By lowering interfacial tension, they cause water to penetrate rapidly, and also cause swelling of the fiber which aids in loosening bond between fibers and increases friction between paper particles.

(b) Cause solution to be negative because the hydroxl ions greatly exceed the hydrogen ions. This is caused by the hydrolysis of the chemicals. Cellulose fiber itself is negative. Hence, negative charge on fiber is increased. Carbon and other particles are also given a higher negative charge. Hence when freed from the paper by emulsification of the binding oils, the fiber and ink particles repel each other. This is known as dispersion.

(c) Emulsify oils and rosin so that the ink particles are freed from the stock.

(d) Dissolve soluble substances.

(e) Return to a colloidal state, reversible colloids such as clay filler, and disperse them.

(f) Deflocculate and disperse other solid particles, and also do likewise with irreversible colloids.

With some stock, cost comparison between several formulae that work must be made. Casein coated paper can be taken as an example. Casein is an irreversible colloid. Use of hot water at 160 deg. F. or higher would greatly aid deflocculation and dispersion. But it is an economic problem as to whether the heat costs more or less than the chemicals. Where exhaust steam would be used, heat costs less but makes the setup more complicated. Colloidal substances such as pigment dyes are best attacked with hydrophilic colloids that have a greater affinity for the dye than the cellulose. In any event, formulas or detergent mixtures are such as will not damage fiber, but preserve the advantages obtained by the method used to defiber. Neither chemical nor mechanical treatment damages the stock.

Paper Stock Handled

The system handles mixed colored ledger, white printed or colored stock, magazines, books, news, and kraft including shipping containers. Silica is removed from containers. Some stock of course is not worth reclaiming—e.g., chip board and any other stocks which were manufactured from printed waste paper without removal of any ink. Parchmentized papers are unsatisfactory. Other types of waste possibly would not be processed, either because of their high cost or because, being free from ink or coloring matter, they can be used as part of the beater broke. It would be uneconomical to process waste costing $50 a ton when fiber of better quality can be produced from waste costing $26, especially when the latter waste can not be used directly as beater broke. In this connection it should be considered that high-priced unprinted waste used as beater broke is receiving a second beater and refining treatment which diminishes its strength, whereas, were such waste defibered in the pulp reclaimer it would have the same characteristics as the original pulp.

Installation

The output of one reclaimer is six tons daily on a 24-hour basis. Any greater tonnage than that is handled by installing them in a battery feeding to one point. The additional equipment required in an installation depends to a great extent on the type of waste paper being processed. A heavy stock should receive preliminary treatment in a soak chest in order to maintain the 6-ton daily production of each reclaimer. Light weight stock can be fed directly to the reclaimer. Should the stock be dirty it is necessary to run it through a duster. An excellent setup is a duster feeding directly into a soak chest which discharges into the reclaimer. When processing on the reclaimer has been completed, the output can be discharged into a chest or directly to a beater. However, if the waste paper contained clips, staples, cellophane and other undefibrable matter, the reclaimer output should be riffled and screened.

Costs

Operating costs depend upon quantity of production as well as type of stock processed. The reclaimer alone requires 40 h.p. per ton of pulp produced together with 20,000 gallons of water per ton. A duster requires an additional 5 h.p. as does the soak chest. Chemical costs vary from $1.50 per ton for news up to $3.00 for mixed colored ledger. One operator can handle two reclaimers which would be fed from one duster and soak chest requiring a separate attendant. In the event that only one reclaimer is used, the same labor would be required. Maximum processing costs are on production of 6 tons or less daily, using only one reclaimer with its attendant in conjunction with a duster and soak chest requiring a second attendant.

Shrinkage costs depend upon cost of waste paper used. This is averaging 10% in the case of mixed colored ledger and as high as 30% on sulphite magazines containing a large amount of clay.

Current Methods of Purifying Water for the Pulp and Paper Mill*

By A. F. McConnell[1]

Abstract

Some of the constituents in water which make it undesirable for use as process water in the pulp and paper industry are discussed.

A description of several means to remove or reduce impurities and harmful constituents is given which includes the zeolites, Spaulding precipitator, and sand filters.

The technology of water purification is the field of operation that lies between straining out floating debris to that of making any water, even ditch water, comparable to distilled water. Pulp and paper mills are interested in all forms of water purification from the crudely strained water that makes a tolerable water for certain purposes, the partly purified water for process work and even those nearly perfect waters that are needed for high-pressure boiler feedwater.

Water Supplies

A satisfactory water supply is one of the considerations that dictates the location of a paper mill and generally, the raw water supplies of most paper and pulp mills are not heavily polluted by either the natural scoured off materials of erosion or by the wastes of industry. Some mills, however, have unsatisfactory supplies, either because the water is naturally unsatisfactory or because the water has changed since the founding of the mill. The increasing density of population and industry has polluted more and more the drainage from collecting areas. The diversion of water for municipal purposes has in some cases, depleted an otherwise satisfactory supply and waters that were once satisfactory are no longer so.

Erosion of soil increases with the cutting down of forests and with the spread of farm lands and the water drained from such areas into streams increases in turbidity. Industrial waste discharged into a stream may make many changes in natural waters but these changes always lower the quality.

Objectionable Waters

The objectionable waters encountered most frequently in the paper industry are those that are turbid, those that are highly colored and those that contain appreciable amounts of iron, manganese, organic matter and hardness.

Turbid water is dirty water. Turbid water contains clay, sand, humus and other material suspended in it. The "Progress Report of the Committee on Quality Tolerances of Water for Industrial Use" says, under the heading of "Pulp and Paper," "Suspended matter (turbidity) is troublesome because it becomes entangled with fibers and causes spots and other imperfections. It also decreases the brightness or strength of the paper. Tolerances range from 5 parts per million of turbidity for fine papers to as high as 50 parts per million for groundwood pulp."

Color in water is caused principally by organic matter and highly colored waters usually contain iron and sometimes manganese. The Committee Report on Quality Tolerances says of color, "Water having little or no color is essential for the manufacture of most paper, except certain grades in which color and appearance are not important. For high-grade paper, such as writing, book and other white papers, the color should not exceed 5 parts per million and for some other products should be nearly zero. Colored paper in which the shade is important should also have water of about this quality."

Water Purification

Turbidity removal is accomplished by one of two processes; the choice usually being dictated by the amount of suspended material present. With slight amounts, the water may be treated with alum and strained through sand filters. When larger amounts are present, a coagulant, usually alum, is stirred up with the water, after which the water flows into a tank or basin where the velocity is so reduced that the coagulated dirt will sink downwardly through the water to become a sludge at the bottom while the clarified water is drawn off from the top and then passed through sand filters.

Color removal is accomplished in the same way as turbidity removal but closer regulation is required of the chemicals fed. The pH, that is the ratio of the alkalinity to the carbon dioxide in the water must be adjusted to within rather narrow limits. Alum is the coagulant most frequently used. The alum floc forms a tremendously extended surface and the color collects in the alum floc and the color, alum floc and any turbidity that may be present is precipitated downwardly as a sludge in the settling basin.

Iron and Manganese

Concerning iron and manganese the Committee on Water Tolerances states: "Iron is objectionable in water for paper mills since cellulose has the property of adsorbing iron from dilute solutions. This adsorption of iron causes a yellowing of white papers and a dulling of all shades of colored papers, particularly of the more delicate tints. It is also very objectionable in photographic papers. The amount of iron permissable depends on the grade of paper manufactured. For high grade papers where color is important the water should contain less than 0.1 part per million as Fe, although some high-grade writing-paper mills are operating with water and iron content of which ranges from 0.1 to 0.2 parts per million. If the water is treated by coagulation and filtration it should be possible to reduce the iron content to 0.05 parts per million.

Manganese in paper mill water is extremely troublesome. It behaves somewhat like iron and causes similar staining and discoloration. It is also troublesome because of its tendency to clog pipe lines with black

*Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1]The Permutit Company, 330 W. 42nd St., New York, N. Y.

oxide deposits. It is very objectionable in bleaching operations as the chlorine bleach will oxidize the manganese to permanganates which impart a reddish color to the fibers. Tolerances for manganese are lower than those for iron; high-grade products may require water containing less than 0.05 parts per million as Mn."

IRON AND MANGANESE REMOVAL

Iron removal methods depend on how the iron occurs in the water. If fully oxidized it can usually be removed by settling and filtration. If partially or wholly in solution it may be removed by aeration, followed by settling and filtration. If iron is present in organic or colloidal form, as in many colored surface waters, it may be removed by coagulation with alum followed by settling and filtration. Soluble ferrous iron in clear, deep well waters may be removed, together with the hardness, by the base exchange action of the zeolite water softener.

In general, manganese is more difficult to remove than iron and requires higher pH values. It oxidizes more slowly and requires long detention periods in basins, together with addition of special reagents for complete formation of manganic precipitates; often its presence also causes the iron to resist oxidation and precipitation.

Recent Development of Water Purification

Some recent developments have taken place in equipment for the removal of obnoxious substances from water and the most interesting is the reduction in settling time obtained as a result of better methods of floc formation and the use of the adsorbent powers of previously formed sludge. Definite and continuously unvarying results are now accomplished with mixers equipped with variable speed motors driving a shaft carrying paddles between stators fixed in the mixing cells. These mixers, called flash mixers, are used to secure a rapid and intimate mix of the applied chemicals with the raw water. The water, after leaving these flash mixers, flows into other cells containing roll mixers or floc formers where the pin point floc formed in the flash mixers is agitated into larger masses and is thus made more settleable. Improved chemical feeds permit closer adjustments than were ever before obtainable, thus insuring certainty of results and decrease of settling time, for the settling basin is no longer called upon to even out the fluctuation in treatment caused by inaccurate feeds. Solution or wet proportionating feeds now have an accuracy of plus or minus 2%, which is about the accuracy of the meter that controls them. Dry feeds for alum and activated carbon have an accuracy of about 5%.

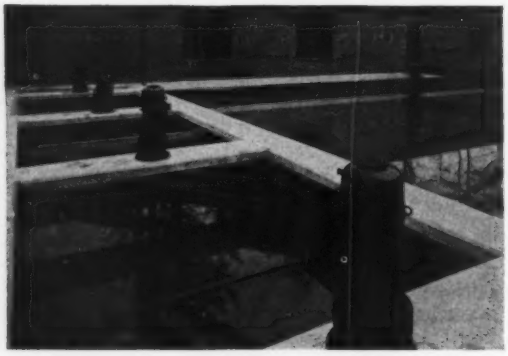


FIG. 1
Roll Mixers or Floc Formers

By adequate mixing with power-driven mixers and the use of accurate chemical feeds and sludge removal, the settling time in the new settling basins has been reduced from the 4 or more hours for the old type basins to hours or less.

In the Spaulding precipitator where the products of previous reactions are continuously mixed up with the entering raw water and where a sludge blanket is maintained, better results than ever before obtainable are secured with a total combined mixing and settling time of 60 to 70 minutes.

Equipment for continuous sludge removal from the Spaulding precipitator and for daily, twice daily or thrice daily removal from settling basins is almost always included in modern industrial plants. The advantages are all in favor of including it, for the prompt removal of sludge prevents fermentation and the rise of gas bubbles to disturb the settling floc. Sludge removal also lessens the chance of any color, odor and taste being given by the stored and stale sludge to the water being treated.

If desludging equipment is omitted, space must be provided in the settling basin to retain the sludge until the basin is removed from service for cleaning, and to avoid the necessity of frequent shutdowns, ample space must be provided for this hoarding of waste. This requires deep basins, 15 to 20 feet or more in depth. With sludge removal equipment basins can be 8 to 12 feet in depth and produce a better water.

In the Spaulding precipitator, sludge is continuously mixed with entering raw water but since sludge is being continually withdrawn and sent to waste, old sludge does not accumulate and the bleeding keeps the sludge fresh through continuous depletion of the precipitates.

Settling basines, besides being relieved of the necessity of being large enough to compensate for inaccurate chemical feeds, poor mixing of chemicals with water and having to act as flocculating chambers in addition to their real function of reducing the velocity of flow and detaining the chemically treated water until the precipitates have settled out, have had their hydraulic values improved. Adequate baffling is now used at inlet and outlet and at folds in the basin, if these are necessary. Around the end baffles, that were wasteful of space and the cause of undesirable currents, have been largely eliminated in the newer designs. In making a turn in the properly designed basin the water is collected behind a perforated baffle, then carried across, turned again and passed out through perforated baffles to flow back parallel to itself.

The spread between minimum and maximum velocity of flow in settling basins has been narrowed. The permissable velocities of flow are now normally limited to between ½ and 1¼ feet per minute; better still is ½ to 1 foot per minute. Too low a velocity increases the cross-sectional area of the basin unduly and promotes short circuiting. Too high a velocity prevents the floc settling out and disturbs the already settled floc.

Spaulding Precipitator

In the Spaulding precipitator the treated water is brought into intimate contact with the previously formed precipitates and then separated from the precipitates by passing it through a sludge blanket in a tank section with sloping sides so that the velocity

of flow is steadily decreased. This improvement has been accomplished by using a radically different design of settling tank than any previously employed.

In the precipitator, the flow is downward through the mixing zone where the mixing of the raw water, the chemicals and the previously formed sludge takes place. The water leaves this mixing zone through ports at the bottom of the sludge filter zone and filters upwardly through a suspended filter bed of sludge. The level of the top of this sludge is controlled by bleeding off, through automatic means, from a sludge concentrator, the excess of sludge as fast as formed.

As the water rises through this filter zone, its upward velocity, because of the decreasing sectional area, constantly decreases, hence the water continuing its upward rise at a continually decreasing velocity reaches a plane at which the upward flow is too slow to support the precipitates any further. Consequently, the precipitates in a suspended condition are left behind and the settled water then flows from the collecting through at the top of the precipitator to sand filters which effect a final clarification.

The time of mixing in the mixing zone of a Spaulding precipitator is from 30 to 40 minutes. The time of detention of the water being treated in the filter zone, that is in the settling region, is from 20 to 30 minutes.

Any of the usual chemical feeders are used, and these feeders may be located either at the top of the precipitator or at ground level. The choice of feeder depends upon the chemicals to be fed, the volume of water to be treated and the degree of accuracy of feed required.

The usual wet chemical feeder employed is the electrochemical feeder. In this, the chemicals are dissolved or suspended in a known volume of water in a tank equipped with agitator and drawoff pipe. An electrically operated device, actuated by a water meter on the inflowing raw water, serves to lower the drawoff pipe at a rate corresponding to that of the water entering the precipitator, thus feeding the chemicals in proportion to the amount of water being used. Adjustment can quickly be made by advancing or retarding a marked dial the required number of divisions. All these feeders have been so improved that the possibility of over or under treatment now only occurs as the result of gross mishandling of equipment.

The Spaulding precipitator is used for coagulation and settling of turbid waters and for the removal of hardness, iron and manganese, and with special modifications for the removal of silica and fluorides from water by adsorption.

Filters

There are two general types of sand filters: pressure and gravity.

Pressure filters contain a bed of filter sand supported on a bed of coarser material, graded in size, that in turn rests upon a collecting system and all are contained in a steel shell fitted with the necessary valves to send the water downward through the sand during filtration and upwardly during backwashing.

Pressure filters are used where it is desired to save repumping, for the filtration can be performed at any pressure.

Gravity filters contain the beds of filter sand and supporting material in rectangular concrete box or in cylindrical wood or steel tank. These, like the pressure filters, are fitted with the needed valves for passing the water into the filter and into the top of the sand bed during filtration and sending the water

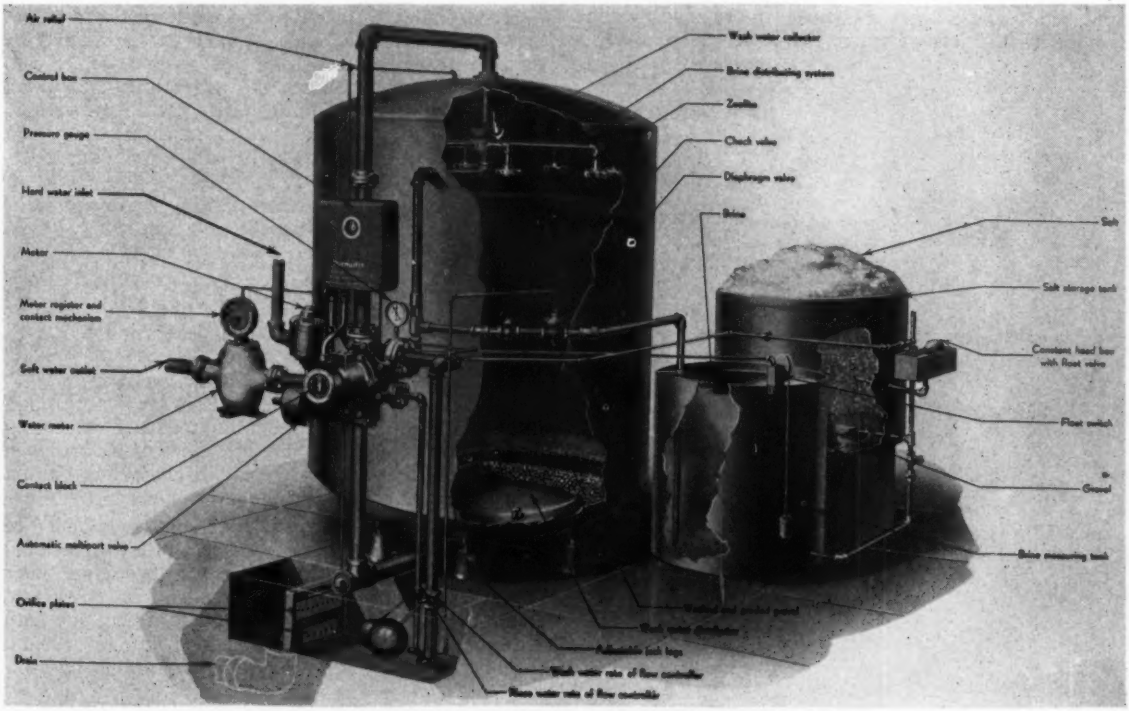


FIG. 2
Zeodur Water Softener

into the bottom and upwardly through the sand and into wash troughs during backwashing.

The structural design of gravity sand filters has persisted unchanged except that increasing interest is being shown to the advantages of false bottom designs with special strainers, ferrules or other distributing means in the false bottoms.

Marked attention is also being given to sizes of filter sand and to the necessity of varying backwash rates when the temperature of the backwash water changes. More efficient sedimentation basins deliver better water to filters and this with the many advantages in favor of larger sized sand have encouraged designers to use sands over 0.5 mm. and up to 1 mm. in size.

It has long been known that warm water was less efficacious in cleaning a bed of filter sand than colder water at the same velocity and that velocities high enough to expand the sand bed a certain per cent, were necessary. Current design is to make these velocities higher than in the past. Filter plants in the 1890's used backwash rates of 7½ gallons per square foot a minute. Twenty years ago, the prevailing thought was that 10 gallons a square foot was adequate. Now attempts are made to suit the filter backwash rate to water temperature and rates above 20 gallons a square foot a minute are not uncommon.

Observation has shown that pieces of unbroken crust that forms on the surface of the sand bed form the nucleus of mud balls. To break up this crust and reduce it to a size that the backwash water will lift it and carry it into the wash trough and thence to waste, surface wash equipment is used. The older method was to use a hose supplying water under high pressure, but the presence of wash troughs hindered this method from attaining full efficiency. The latest development in surface washing is a rotating design which has arms that sweep above the surface of the sand bed. These arms are caused to revolve by the reaction of the jets of water that emerge from nozzles that are attached at an angle to the vertical plane.

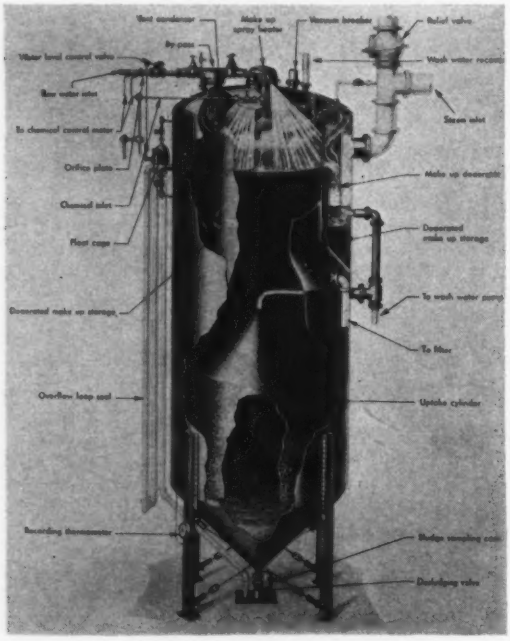


FIG. 3
Hot Lime-Soda Softener

In operation, the water in the filter is drawn down to the surface of the sand or slightly below it and the surface wash is turned on for a minute or two; then the bottom wash is turned on and the two are continued in operation for a minute or more after which the surface wash is turned off and the backwash is completed in the usual manner with the bottom wash.

Boiler Feed Water

Some purification of water is needed in every paper mill. Certain processes can be satisfactorily performed with a mere straining of the raw water. Others require water of greater purity and of these the boiler feed water requires the greatest attention that can be given to it and repays the attention with the greatest returns. This is especially the case since paper mills are installing boilers of ever increasing pressure and crudely purified waters are no longer satisfactory for these high pressure units.

Water purification technique has advanced step by step with the development of high pressure boiler plants.

Hot lime and soda softeners that combine softening, heating and deaerating until all traces of oxygen are removed are available for boiler plants where this combination is most desirable.

In the hot lime soda process of softening water the water is first heated to temperatures at or near the boiling point: next it is treated with the required amount of hydrated lime and soda ash: then settled and finally filtered. The lime and soda ash reacts with the hardness in the water to precipitate the calcium and magnesium in the raw water plus the added lime, as a sludge consisting of calcium carbonate and magnesium hydroxide.

Since chemical reactions proceed much faster at higher temperatures, more complete softening may be effected in the hot lime soda process than in the cold lime soda process. Since the water must be heated to approximately the boiling point, the hot process of water softening is used for those cases where the water is to be used but principally for boiler feedwater.

The equipment used, when treating water for high-pressure steam boilers, usually consists of

Primary Heater
Chemical Feeds
Settling Tanks
Deaerating Heater
Filters

For low-pressure boilers, the deaerating heater is sometimes omitted.

Exhaust steam is used to heat the raw water.

In the primary heater, the water is sprayed through the steam in the top of the settling tank. This heating liberates the free carbon dioxide, the dissolved oxygen and nitrogen from the water and discharges through a vent or vent condenser to the atmosphere.

The chemicals, hydrated lime and soda ash are fed from electrochemical feeds at a rate proportional to the varying flows of water passing through a meter on the raw water line. As the chemicals come into contact with the hot water they act to precipitate both the lime in the water and the added lime or calcium carbonate and the magnesium or magnesium hydroxide.

These precipitates grow larger and heavier as the water passes slowly downwards in the settling tank

and when the water reaches the lower edge of the drawoff chamber and slowly rises through it, the precipitates continue their fall to the conical bottom of the settling tank to be drawn off to waste through a manually or automatically operated sludge valve.

From the drawoff chamber, the water passes to the deaerating heater which may be an integral part of the settling tank or a separate piece of equipment. Here the water is thoroughly scrubbed with all the steam required for the primary heater. Very complete deaeration is effected, furnishing an effluent with less than 0.01 cc of dissolved oxygen per litre.

The settled water after passing the deaerator and containing but a small amount of flocculant matter is then passed through filters to service.

These filters are of the pressure type and are filled with a nonsiliceous filter medium such as graded anthracite or calcite supported on several graded layer of larger material.

Zeolite Softeners

Zeolite softeners have been available for thirty years. You have long been familiar with the siliceous zeolites such as the precipitated synthetic type called Decalso or the glauconite or greensand such as Zeo-Dur and which are regenerated with salt following a softening run. In these softeners the zeolite, which is in granular form, is supported on a bed of gravel in a steel shell. This shell has a collector and distributor at top and bottom and the required valves for passing the water downwardly through the zeolite during softening and upwardly during backwashing. When the softener has completed the portion of the operating cycle where the hardness is removed from the water, the unit is cleansed by backwashing and then regenerated by flushing a brine made from common salt, downwardly through it, which restores the zeolite to its original capacity for softening water.

The latest type of zeolite, carbonaceous zeolite, or Zeo-Karb is unaffected by acids and can therefore be regenerated by acids instead of salt and when thus regenerated, the carbonaceous zeolite exchanges hydrogen for the lime, magnesium and sodium in the water. It thus eliminates bicarbonates and gives an effluent of low total solids.

Treating water by passing it through a bed of carbonaceous zeolite that is regenerated with acid is the only known method, except distillation, for removing sodium bicarbonate from solution; also it is the only method that will simultaneously soften water to zero hardness and reduce alkalinity to any desired value, that will remove all bicarbonates from solution which are transformed into free CO_2, a gas that can be purged from the water by deaerating.

The carbonaceous zeolites remove sodium, magnesium, calcium, iron, aluminum and manganese from solution in water.

The nonsiliceous character of this zeolite makes it suitable for softening water low in silica, since low silica waters are particularly aggressive to siliceous zeolites. The nonsiliceous character of this zeolite makes it particularly suitable for the treatment of feed water for high-pressure boilers where even slight increases in silica in the water are undesirable.

Nonsiliceous zeolite can be regenerated with either acid or salt and acid and salt regenerated units can be operated in parallel and their effluents can be mixed in any proportion to give any predetermined alkalinity.

Further Experiences with Forced Circulation in Digesters*

By D. C. Porter[1]

Abstract

Some of the benefits and problems involved in the use of forced circulation in sulphite pulp digesters are discussed.

After more than nine years of operating sulphite digesters equipped with forced circulation systems, we are able to draw some sound conclusions as to what we think the design of the systems should be and what the economic gains have been. We are also able to see quite clearly, what the progress of the process has been, what operating refinements have been made, what the materials of construction should be, and how to control the process.

Kimberly Mill Installation

The original installation of the Kimberly-Clark circulating system, at the Kimberly Mill, consisted of a collector ring or strainer located just below the top girth strap of the digester, piping to convey the liquor to the circulating pump, a single suction 1000 g.p.m. pump, a two-pass tubular heater for indirect heating, and piping to return the heated liquor to the bottom of the digester. Although this equipment enabled us to obtain a thorough and uniform circulation in the section of the digester between the bottom and the collector ring, like most installations that may be considered of a pioneering nature, it did not go quite far enough toward the point of perfection which we were seeking. From the ring to the top of the digester, only natural circulation was taking place and consequently, the chips in this area were being cooked at a lower temperature than those in the well-circulated part of the vessel.

To correct this condition, the design of the system has been changed and piping, to return a proportionate part of the heated liquor to the top of the digester has been added. The result has been a marked decrease in rejections or uncookd chips and a pulp that is more nearly uniform throughout the entire digester. Another benefit of the changed design is that it allows a much more rapid rise to maximum temperature without an increase in rejections, as was the case in the original design, which may be used either to obtain a saving in cooking steam by cooking at a lower maximum temperature or a shortening of the cooking cycle to increase plant capacity.

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] Supt. of Sulphite, Kimberly-Clark Corporation, Kimberly, Wis.

As noted above, the Kimberly installation was designed for indirect heating which fits into the economic picture of the mill quite nicely. On the other hand there are many mills with steam costs so low, either because of low generation cost, or because of existing heat recovery systems such as chemipulp, that it is impossible to justify the cost of installing indirect heaters and to them, forced circulation with direct steaming is much more attractive. Previous to the past year, such installations consisted of strainer rings, piping and pumps and the steam was injected through nozzles in either the bottom tee, the bottom cone or a combination of the two. Successful as these installations have been, they are only doing part of the job because it was not possible to fit truly automatic control to them and obtain all the benefits of a well-designed circulating system.

To make the use of fully automatic temperature control possible on the installation using direct steam, a *hydroheater*, specially designed for this work has been incorporated in the circulating system design. The hydroheater fitted with a diaphragm motor steam flow control feature is used in conjunction with a time-cycle temperature controller and its operation is identical to the operation of any air operated steam valve which is used for temperature control. The control of circulating systems will be covered later in this paper.

At the start of our experiments with the circulating systems we were seeking an improvement in quality and uniformity only and expected an increase in capacity due to an increase in yield per unit of wood but to gain the uniformity and quality improvements anticipated the need for a chip packing device was indicated. During the development of this machine, two things became quite apparent. First, the machine must be easily and readily adjustable to govern the chip filling rate and type of filling and second, the proper use of such a machine could make substantial increases in digester capacity possible.

The machine developed, known to the industry as the Babcox-Wilcox Kimberly-Clark chip packer, is the result of this phase of the work. To describe it simply, the packer consists of a rotating, adjustable metering plate which feeds chips at a controlled rate to a set of rotating and adjustable bats or paddles slightly below the neck of the digester.

It is generally known that with any type of filling, the slower chips run into the digester and the wetter the chips are, the tighter will be the packing. To our knowledge, the Babcox-Wilcox Kimberly-Clark packer is the only one which permits easy and ready control of chip filling rate and type of packing.

When we first started using this packer, we operated it with the triangular openings in the metering plate wide open and filled the digesters with chips in about twenty minutes. However, as we learned more about its operation, the size of the openings was progressively reduced until at present, the widest point of the opening is ten to eleven inches. Even though this more than doubled the chip filling time, the increase in digester production and the savings in chemicals and steam more than paid for what might normally be considered lost time. Various changes in the angle of the paddles or bats altered the type of filling and varied the degree of packing but to a smaller extent than did the rate of chip feed.

Other experiments with the size and shape of the spout between the metering plate and the paddles indicated that the type of packing can be materially effected by this means also. A spout too small in diameter can give packing which appears to be perfect but at the same time be of such a nature as to change the uniformity of circulation and produce a pulp, high in rejections and very difficult to screen. However, by the proper combination of spout shape, rate of filling, and paddle angle, the optimum degree and type of packing can be obtained for any kind of wood.

During the course of the studies in connection with the chip packer, the procedure of steaming the chips during filling was carried out. Although nearly all are familiar with this practice it might be well to cover it briefly here. As the chips are being charged to the digester, direct steam is admitted through the steam nozzles in the bottom tee and cone and continued until the entire chip charge is thoroughly heated. An approximate estimation of the additional chips charged to the digester by this procedure can be made by completely filling the digester with chips and then injecting the direct steam, taking note of the drop in the chip level when the chips have been completely steamed.

This procedure also insures a maximum charge of acid at the start of every indirect heated cook which allows a sufficient quantity of acid to remain in the digester during and after the recovery period to maintain circulation. There are, however, dangers attached to this practice as well as benefits. When the digester is completely filled with acid, the pressure for the first three and one half to four hours will be hydrostatic in nature and very difficult to control. If the control system should fail and the vessel is not equipped with a safety release, pressure in excess of the safe working pressure of the digester may be set up suddenly. After a portion of the liquor has been evaporated and there is a gas space at the top of the digester, failure of control is not quite so serious as the pressure rise is quite gradual and would ordinarily be noticed in time to prevent any damage.

When the chip filling phase of our operation had been worked out to the point where a further increase in the quantity of chips charged to the digesters made it difficult to get clean blows, our efforts were directed to the recovery of sulphur dioxide in the later portion of the cooking cycle.

Our first pressure schedule was very simple in that the maximum pressure of 85 pounds was maintained until 2½ hours before the end of the cook and at that time reduced at a uniform rate to 30 pounds for blowing but this procedure did not recover all of the sulphur dioxide that was available to recover and consequently there was a considerable discharge of gas from the blowpit stacks. Gradually, the blowdown period has been lengthened until now, the pressure reduction is started 4½ hours before the end of the cook and the pressure reduced to as low a point as possible before building it up to 35 pounds with direct steam for blowing. To show what this means in cost at the Kimberly Mill, reducing the digester to 20 pounds instead of to 30 pounds before blowing, reduces the sulphur costs $14,000 per year.

While working on the gas recovery problem, we noticed there was a marked decrease in the circulating rate toward the end of the cook, evidenced by the decrease in power consumption, which coincided with the removal of large quantities of gas from the digester. However, when the relief valve was closed,

to build up the pressure for blowing, the circulating rate returned almost to normal. We reasoned that the reduced circulation was due to foaming caused by the rapid evolution of gas and that if a higher average rate of circulation could be maintained during this period, more gas could be recovered for the fortification steps of the process.

To accomplish this, the digester pressure is reduced by steps instead of at a smooth and uniform rate. In detail, the procedure is to reduce the pressure rapidly for a period of about twelve minutes and then interrupt the blowdown by closing the relief valve and stop all relief for an equal period of time, repeating these steps until the minimum pressure is reached. During the periods of rapid relief, there is a sharp reduction in power input to the circulating pump motor but during periods of no relief the power consumption returns to almost the same value as during the early part of the cook. The sharp reduction in sulphur consumption the adoption of the interrupted blowdown procedure brought about, is proof to us that a high average rate of circulation throughout the entire cook is essential to economic cooking.

Materials of Construction

In passing, it may be well to note the alloy steels that were used originally and those used at the present time. The circulating pumps, which are still in good condition after nine years of service, are of the 23-11 type alloy and the piping, some of which was replaced after seven years of service is 18-85 Mo. Strainer rings, which were installed five years ago, and show no signs of wear, were fabricated of type 316 alloy and the castings used with these rings are of B&W type 640. Heat exchanger tubes at present are 16-13-3 analysis but we have used 18-85 Mo. tubes with excellent results. In any future equipment for circulation, we would like to use the 317 alloy as it seems to be somewhat better for this service than any of the other alloys noted above.

To gain uniformity in any batch process, and sulphite cooking is no exception, it is essential that each and every batch be processed in an identical manner. In other words, digesters must be filled with chips without change from cook to cook, and temperature and pressure cycles must be duplicated to produce uniform results, but these variables cannot be controlled without the proper equipment.

A well designed chip packer eliminates the filling variable but temperatures and pressures are likely to vary widely if controlled by hand or with a more or less semiautomatic type of controller. Maximum pressures may be controlled very easily with the controllers in general use but the reproduction of the blowdown schedule is an accidental rather than a normal occurrence and duplication of the blowdown is important to acid and pulp uniformity. Hand control of temperature may lead to variations in rate of temperature rise and time to maximum temperature as well as variations while at the maximum temperature. The best control known at the present time is gotten by use of time-cycle or program controllers for both pressure and temperature which makes the control of each of these variables independent of the other.

The application of time-cycle pressure control is comparatively simple and does not present any difficulties but this is not so in the case of time-cycle temperature controllers. The reference point or location of the temperature measuring element is vital and must be such that there will be minimum lag and maximum sensitivity.

The usual practice has been to take digester temperatures at the cap and one or two points in the side of the digester but neither of these locations is suitable for automatic control. In either of these places, velocity of circulation is very low which would cause a very insensitive control system and the time of liquor travel from the point being measured to the point of heat input would cause a lag too great to be overcome. In addition to these difficulties, there is a possibility of an element located in the shell of the digester becoming pocketed, causing extreme variations from cook to cook because of inaccuracy.

Another point where temperature could be taken in a forced circulated digester is in the piping on the intake side of the pump. Here, sensitivity would be good because of the high velocity but, as in the other locations described, lag would prevent any degree of control.

To fit the definition of an ideal reference point, there is just one location for the temperature measuring element and that is in the piping between the digester and the discharge side of the indirect or direct steaming heater as specified by patents of Swanson and Lang. At this point, the velocity is high insuring good sensitivity, lag is negligible and as only a small portion of the liquor is being treated at any one time, control is simple and extremely accurate.

Now, the question uppermost in the minds of most operators, is what circulating systems mean to us in terms of quality improvements and savings. For any bleachability of pulp produced, pop and fold is 12 per cent higher in the circulated pulp than it was in the conventional quick cooked pulp as well as being more uniform throughout each cook and from cook to cook. For any beachability, wood density, and acid quality, yield per unit of wood has been increased 8%. Production per digester has been increased 30% in a nominal six ton digester and 45% in an eleven ton digester or an increase in plant capacity of 30% in each case, when the cooking time was the same before and after the installation of the systems. Sulphur has been reduced to 184 pounds per ton of unbleached spruce and to 202 pounds per ton of unbleached balsam or hemlock, all of which were cooked to a very low chlorine requirement. Burned lime has been reduced from 165 pounds per ton to 120 pounds and steam consumption is 4400 pounds per ton when using an acid at a temperature of 40 deg. C. We have had steam as low as 3800 pounds per ton but deliberately sacrificed steam to increase sulphur recovery. Cooking time has been varied from 8 to 36 hours with no detectable change in either pulp strength tests or strength tests of the paper made with these pulps.

To sum all this up, forced circulation, when its operation is supervised by an individual with a thorough basic and fundamental understanding of the principles involved, offers a nearer approach to perfect uniformity than was ever obtained with the conventional quick cook systems. It will be trouble free and effect savings in many cases great enough to pay for the installation in approximately one and one half years.

Additional Information

Porter, D. C. Tech. Assoc. Papers 22:306-308 (June, 1939).
Stanton, A. H. Tech. Assoc. Papers 22:275-278 (June, 1939).
Paper Trade J. 95, no. 2:33-38 (July 14, 1932).
Paper Trade J. 95, no. 22:26-36 (Dec. 1, 1932).

Coated Paper Drying at High Speeds*

By George R. Marsh[1]

Abstract

A discussion of the problems of operating paper-coating machines at high speeds of 500 feet per minute and over is given.

The problem of drying coated paper is as old as the coating process itself. Innovations have been tried over a period of years and hundreds of patents have been issued covering various types and arrangements of driers. Some of these changes were helpful to the industry, while others merely show that no two coating mills believe in doing the same thing the same way.

Studies have been made and papers published covering about all phases of drying from a technical standpoint. You all have probably read some of these reports and listened to discussions on the subject, so I am not going to delve into any of the technicalities.

My intention is to speak briefly on some of the practical considerations or problems which confront both the manufacturers of fast driers and the manufacturer who plans to install a 600 to 800 feet per minute modern machine in his mill.

Engineering Problems

The first point to consider when contemplating a new installation is space requirements and increased loads that will be put on existing buildings and floors. Insulated steel drying tunnels weigh between 2500 and 3500 pounds per 10-foot section, depending on width. Where fan and heater units are located, the weight per 10-foot section may be as high as 6000 to 7000 pounds.

Mill engineers must consider carefully if their buildings can stand this increase in load. Floors for festoon drier rooms were not built with any thought of supporting heavier and faster equipment. Additional posts under the beams are often necessary, especially if room bays are wide. Longitudinally, driers or tunnels are practically self-supporting from the beams. Little or no dependence is put on flooring between beams.

Floor loads are even heavier and the bracing problem more acute when considering the installation of a constant speed surface winder or pope reel, used with fast machines. Reels weigh from 12,000 to 18,000 pounds and require substantial foundations. Reels set on wood floors and braced from below by steel beams and columns may be perfectly safe but can still cause serious vibration. Reels themselves are practically vibration free, but if out-of-round cores are used, and a poor start made on a roll of paper, the roll may start bumping as it becomes larger and heavier. In one mill where the reel is supported on steel from below, vibration at times is so bad that an accountant in an office 380 feet away has difficulty making small figures, due to transmission of vibration through the building to his desk.

Building limitations may make the selection of a new location necessary. There are some advantages in locating new equipment beside existing festoon lines, particularly in having additional labor available to prepare new rolls for the unwind stands or put cores on shafts for the winder.

If the mill anticipates fast operation, machines should be installed on a floor where solid foundations are possible. If a new installation is made some distance away from existing dry lines or on another floor, sufficient help must be available to operate this one unit efficiently. Even with four men assigned to a flat fast drier (two men at each end) the labor cost per ton of coated paper will be in many cases lower than present labor costs on existing slower speed driers.

A drier operating at 600 to 800 feet per minute can dry 30 to 40 tons of paper a day. If an added operator can help reduce waste and broke only ½ of 1%, his wages are easily earned out of this saving. Addition of other units will reduce labor costs considerably.

Mills with turnaround drying lines have more of a problem in finding space for a flat drier. In general, to run at 600 feet per minute with normal weights of coating, a 150-foot drying chamber with 300 deg. F. air temperature will be required. Add to this space for the coating machine and 35 to 50 feet for winding, and a length of 225 to 250 feet is required for a straight-pass unit. Return-type driers have been made and are not impractical. One mill operates two such driers. The coated sheet runs straight about 80 feet and returns underneath in the same enclosure. Winders are on the floor below almost directly under the coaters.

Another mill has a smaller return-pass drier arrangement, where the dry sheet is brought back under the coater to a winder directly behind the coater. Both mills operate successfully and appear satisfied with their layout of equipment. As a rule less trouble in starting up and running all weights and grades will be experienced if space can be found for a straight-pass drier.

Operating Problems

No matter what the drier arrangement may be, the coating machine must be adapted to higher speeds. Bristle brushes for smoothing and spreading coatings seem to be out of the question at 600 feet per minute or faster. The so-called air-brush coater or air doctor has been used for high-speed coating, and no doubt other types of application will be adapted to fast running. Any coater that can run mechanically at 600 to 800 feet per minute, and that will apply a uniform coat without depending on afterflow, should work satisfactorily. If you will appreciate that ten to twelve seconds after a sheet leaves the unwind stands it is being wound on the reel, you can understand why there can be no afterflow of coating materials. Drying at this rate means that the coating must be applied uniformly. Heavy coats on one edge or small coating ridges from improper application will not dry in the time required for correctly coated sections of the sheet. Heavy edges and ridges will

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] C. J. Merrill, Inc., 50-56 St. John Street, Portland, Me.

cause waste and slow downs at the reel and calenders.

An important point to remember is that driers cannot spread coatings nor correct for improper coating application. Small changes in coating formulas and in body stock may be desirable. We know that some mills have made changes. This is a problem for the individual mill and one that superintendents are reluctant to discuss. Certainly closer control of density and viscosity of the coating mixtures is required for higher speed operation.

Moisture Content

For maximum production with a minimum of drier length, 100-pound steam is necessary. Air for drying will be close to 300 deg. F. As far as can be ascertained, these high temperatures are not injurious to either paper or coating if the paper is removed from the drier with reasonable moisture remaining (4 to 5½). While there is any free moisture on the coated surface, drying takes place at or near the wet bulb temperature of the air in the drier. Wet bulb temperatures are probably not over 150 to 175 deg. F. in most driers. If the sheet is removed from the drier and wound on the reel with 4 to 5% moisture remaining, the chance of injury to the quality of coating is less than in many festoon driers. Air around festooned paper may be only 140 to 160 deg. F., but we have taken the temperature of the air being discharged from overhead ducts and found it to be as high as 210 to 220 deg. F. Where 220 deg. F. air strikes the sheet as it hangs on the sticks, a small area adjacent to the stick dries in a fraction of a minute. This dry area is subjected to hot, relatively dry air for 10 to 15 minutes before the rest of the sheet is dry enough to remove from the dry line.

Paper at this dry spot undoubtedly reaches a higher temperature than does the stock at the dry end of a fast drier. Good paper has been dried for years on these lines in spite of their shortcomings, so we do not hesitate to say that just as good paper can be made today at elevated temperatures and speeds.

In fact, better coated paper can be made on these modern driers if paper is removed from the drier and wound with uniform moisture throughout the roll. Condition indicators and recorders are available to show if any changes are taking place in the sheet as it is being wound. With these instruments it is possible to maintain conditions which prove to be most satisfactory from a calendering viewpoint. If the indicator has been held to a constant point or if the recorder shows a reasonably straight line, the roll will calender to a uniform finish, and if stock has been wound with reasonable moisture remaining, the desired finish will be obtained and held with much less weight on calenders than is the case with overdry paper.

When we return to a mill to see if they are progressing satisfactorily with new equipment, we avoid bothering the coater or winder men. We ask permission to talk with the calender room foreman. Calender operators can best tell how well the coaters and driers are operating. After all, it's the calender men who put coated paper in condition to either ship out on skids or in bales of waste.

If the drier operators have kept a close check on the condition of the paper, as shown by condition indicators or recorders, the stock will run through the stacks without trouble and the calender operators will be able to get and hold the desired finish.

If the coater, drier, and winder are running correctly and the operators are alert, bull's-eye rolls should be coming to the calender room. Calenders can be operated at full speed without slowdowns or stops. A roll full of flags means slow calendering with stops for breaks, tearouts, broken edges and cuts. Rolls full of flags are an indication that something is wrong in the coating mill.

The operation of these faster units requires more skill and intelligence on the part of the operators, and it may be two or three months or longer before the operators become proficient enough to make good rolls.

Calender operators freely admit that paper coated and dried on fast flat driers will run better, finish more uniformly, and produce less seconds and waste than paper dried on festoon lines and that the cost of keeping cotton rolls in condition is much lower when light calendering can produce the desired finish.

Other Operating Problems

An interesting discussion can easily be started over the question of whether drying is being done with superheated steam or by air in a high-temperature drier. The question can be discussed equally well from either viewpoint. The fact remains that drying takes place, whatever your viewpoint on the superheated steam question. Unless some mill men can correlate their theories with actual practice, they are apt to reject the practice in favor of theory and fail to consider that machines are doing the very thing their theories say can't be done.

Sometime ago we were asked to alter a fast drier to make it safer for organic coating solutions. Drawings of the existing drier, together with changes noted for remodeling for operation with solvents, were put before the fire insurance company for their suggestions and approval. Our drier plans did not coincide with the drying theories of the insurance company engineer. It took several hours to convince him that here was a machine actually producing coated paper day after day despite his insistence that it could not possibly work.

The same prejudice exists in some cases in foremen and operators, who have closed minds when new ideas are presented. Such prejudice retards development and costs the mills thousands of dollars a year. Some of these men have operated festoon dry lines satisfactorily for twenty years. They reject any new ideas or suggestions and insist on continuing the old way, which to them is the only way. Improvements may be welcomed in several mills, while being entirely rejected in another. A good example of this in in the use and operation of suction aprons, which have always been a source of annoyance.

On older aprons three out of the four bearings on rolls were individually adjustable. Operators had a great deal of trouble to keep the blanket running true and at the same time be able to take care of irregularities in body stock.

On newer machines the adjustments for tightening and guiding the blanket were separated from the adjustment for controlling the draw of the sheet. One adjustment took the place of three. Several mills are operating these aprons as they were intended and operators and foremen have remarked about how much help those simplified adjustments were. Yet one mill has removed all these improvements and have gone back to their three-cornered adjustments. Their explanation is that operators are used to making corrections with all three bearings and do not understand the simpler, more direct adjustment.

Management seems to lack appreciation of the fact that high-speed driers are not experiments, but are real production machines and should be operated as such. We try to make these as foolproof as possible, but any piece of integrated machinery requires intelligent operation. Some operators who have been working on these driers for eight to ten years still lack sufficient understanding of the workings of these units to be able to make temperature adjustments, a matter of shutting off a steam valve or changing the position of by-pass dampers. In other mills operators get adjustable rolls, suctions, aprons and rheostats on sectional drive motors so far out of adjustment that finally they throw up their hands and call for help from the manufacturers. They insist that every setting that has been made is essential for the unit to operate at all. In some cases foremen are quite thoroughly convinced that these adjustments are necessary.

We have, in times past, with the consent of the superintendent gone into the mill on a weekend after such troubles have occurred. Rolls were put back where they belong, suction aprons were guided straight and put in line with other equipment, and rheostats adjusted to give better speed control. The following Monday morning operators started up with less trouble than usual. Had they known that changes were made, more difficulty in starting up would be the case. It may be months before all rolls and adjustments are out of line again.

If even minor adjustments are attempted by some operators further trouble often occurs due to improper setting of rolls and rheostats. Soon every possible handwheel and rheostat has been tinkered with in an attempt to correct for the first poor adjustment. If reasonably intelligent men operate these driers, more than half of these troubles are nonexistent. Operators with an open mind accept suggestions and are willing to learn. Adjustments will all be shifted as time goes on, but the intelligent coater or drier man remembers what has been done and changes one thing at a time.

Automatic Splicing

Fast drying requires that many operations previously done by the operators be done automatically. Splicing the end of a new roll to the expiring web and bringing the new roll up to speed at the same time was possible by hand operation when speeds were not over 300 to 350 feet and rolls were 60 inches or under. Occasionally we found a proficient operator who could make flying splices at 400 to 500 feet on narrow stock. Now that speeds are up to 600 to 800 feet and widths have increased to 90 to 100 inches, bringing the new roll up to speed and splicing the end must be done automatically, if slowing down is to be avoided.

Several automatic pasters have been installed to take care of pasting and making splices at high speed. They save the operators much lifting and hauling, and will save the cost of a man if several pasters are adjacent. One man can easily prepare rolls of body stock for three or four pasters, apply the adhesive, and make flying splices as needed, to keep driers running at normal speed. Pasters eliminate entirely the handling of heavy through shafts. Cores are held by chucks running in antifriction bearings. The paper mill has to furnish cores of uniform length for each width of stock or order. Chucks will compensate for small differences in core lengths, but not more than 4 to 5 inches.

The need for uniform lengths does not prove to be much of a consideration once the paper mill is familiar with the requirements. In one case operators of the paper machine rewinders were so considerate of the requirements of pasters in the coating mill that when no cores of proper length were available, they took two short cores and made up their roll. Their foreman had stressed the need for uniform length, but had not mentioned the fact that no shaft would be used to keep cores straight as the paper got down to a small diameter. After a few experiences where cores suddenly showed signs of collapsing in the middle while running on the autopaster, everyone became familiar with the true requirements.

Pope reels are semiautomatic even for slow speed work, but faster operating has brought to the foreground a problem of cores. Almost all coating mills wind on 3-inch pipe cores. Seldom are they round and in many cases ends are badly burred where core heads fit. Starting a new roll of paper on such cores invites trouble from bumping and vibration. Probably complaints of cracked edges and cuts can be largely traced to this practice. As higher speeds are attained, coating mills will have to follow the example set by the paper mill and wind on heavy, true reel bars, and rewind onto cores suitable for calender stands and cutters.

A big difference in winding practice will be found between machine finish paper and coated paper. Machine-finish paper comes to the reel directly after being calendered, is relatively smooth, and has considerable tension applied. Coated stock is rough, full of small cockles from air drying, and will scratch or glaze if dragged over spreader bars. Seldom is there as much tension applied to coated paper at the reel, due to limitations of the tension devices used and to the possibility of weak splices pulling apart.

Instrumentation

More recording and indicating instruments are required than was previously the case. Indicators for measuring the slip of paper on rolls or aprons are desirable. Indicators for holding uniform sheet conditions at the reel are also necessary.

At high speeds it has become impossible, by ordinary means, to measure or see if slip is taking place between the sheet and rolls or aprons. Slip indicators have been developed to more accurately check this condition. Slip indicators have one small rubber-tired wheel operated by contact with the sheet, while a second wheel is turned by the apron or roll supporting the sheet. Any difference in speeds is transmitted to a dial which immediately tells if slip is present and if paper is faster or slower than the roll or apron.

Condition indicators are essential to assist the operators in winding constantly uniform paper on the reel. Recording condition indicators have proven their worth in several mills—not as a check on operators but as a guide to show operators how closely the moisture in the roll being wound is held.

It has always been considered that combined moisture content in the sheet and coating have been the determining factor in getting the desired finish. It is a debatable point whether it is moisture in the coating and stock or whether it is a surface condition

that is the determining factor. We do know, however, that regardless of what the determining factor may be in finishing, if condition indicators are held constant and the recorder draws a reasonably straight line, the finish will be uniform.

Electric Drives

Motor drive systems are usually variable voltage direct current range drives, similar to sectional drives on paper machines, but without some of the refinements found on paper machines. Some of these refinements have been omitted to keep first cost down. As speeds continue to increase, more of these paper machine refinements will be required with less hand control than at present. Combinations of d-c variable voltage and synchronized a-c units are being used on one recent installation.

Since slip is an ever present variable in coating mills, motors on each section of a flat drier combination have been wired with individual vernier rheostats, so that any one unit can be varied in speed 5 to 10% above or below designed speed. Potentiometer rheostat alters speeds of all units in synchronism. The verniers are only to compensate for small changes between sections, due to variable slip or changes in coating or stock.

These vernier rheostats are a cause of many minor troubles, due chiefly to the fact that operators have not a clear picture in their minds of how all the units should function together. We find that often the verniers will be set to one extreme position or another, either fast or slow, with the result that one or two sections are not quite up in speed, or are too fast. It does not seem to occur to operators to bring some verniers to a position that will give additional speed range to other sections. Changes in two or more controls to correct for another seem to be beyond the capacity of some operators.

I have seen machines operate day in and day out at speeds in excess of 600 feet, and in one case order after order has been coated at speeds better than 750 feet per minute.

Production

A few production figures may be interesting. Over a period of six months one machine averaged 3100 pounds coated paper per hour. The average for May was 3700 pounds per hour. During this period were 13 days when the combination of intelligent operators, properly adjusted machine, and good body stock was such that the production was over 45 tons of paper per day, with waste of 2.1% average at the machine.

These production figures are quite impressive, especially as you compare with festoon lines running 200 to 250 feet per minute producing 5 to 10 tons of coated paper a day. Some individual days figures are more startling. Within the last month there were three days when production on one of these units was above 50 tons.

Probably the highest production on one machine in a 24-hour period is 117,158 pounds coated, with 2.2% waste. Six orders were run; widths were from 64 to 84 inches; order size varied from two rolls to 21 rolls.

No doubt there will be more of these extremely high production machines built in the next few years, to satisfy the demand for speed and still more speed. But is this the right answer to the problem of increased production? Economy comes in improving quality and reducing waste and seconds. The same materials go into the cost of the finished stock, whether it is run at 100 feet per minute or 1000 feet per minute. The only possible saving is in labor. Offsetting this possible gain in cost, due to lower labor per ton of paper, is the added cost of equipment to run successfully at high speed and the probable increase in quantity of waste and seconds.

One thousand feet per minute is too fast for the coating machine tender to see imperfections. By the time the reel operator notices the defects and transmits that information to the coater men, several thousand feet of paper may have been imperfectly coated.

On the other hand, two 500 feet per minute machines would produce as much paper, and as a rule would not require any more operators. Imperfections can be caught at their source, less broke builds up in case of poor splices, and the initial cost of a 500-foot flat drier with auxiliary equipment is much lower than for a 1000-foot machine.

Fast flat driers have been built to accommodate a web of paper as wide as 104 inches and have been designed to operate at 600 to 800 feet per minute. The answer to the question of what the limit of width may be rests with the paper mill. Until uniform stock can be furnished to the coating mill, free from slack edges, variable density, uneven dryness, and with rolls free from punky spots and splices that often pull apart, 90 to 100 inches is as wide as seems practical.

Even now speeds of 600 feet per minute are in many cases beyond the ability of present operators. To hold to these speeds with consistently good quality and low waste, more intelligent operators are required. Maintenance men—not repair men who wait for a failure to occur must be available to service these driers and coaters. This requires a man who understands a little about the coating and drying process, as well as one who has a rather intimate knowledge of the mechanics of the unit. Until such time as these labor requirements are met, at least in part, you must be content with either lower operating speeds or inefficient operation and higher waste than necessary at high speed.

To Complete Dam Project by Fall

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., June 23, 1941—Completion of Powell River Company's new dam project to replace the temporary log crib built at the time of the original Lois River power development is expected by next fall, several months in advance of scheduled time.

Construction is being carried out by Stuart Cameron & Co., whose president, A. S. McLean, has supervised construction activities on the three stages of Powell River plant extension—installation of five and six machine-rooms in 1925-27; the first big Lois River project in 1929-30 and now the permanent dam. William Way is directly in charge of the operation, working with Ned Beaton, resident engineer of Powell River Company.

B. C. Condit of San Francisco, consulting engineer, who has designed most of Powell River's power developments for many years, has been advising on various technical details.

The dam is a radius-arched concrete structure, the height of the crest being 130 feet above the river bed.

The Bracing of Rolls, Skids, and Bundles of Paper for Carload Shipment*

By J. G. Bucuss[1]

Abstract

A discussion of several methods of bracing rolls, bundles, and skids in freight cars is given.

During the past 15 years remarkable progress has been made in improving the bracing methods to protect paper products while in transit. These advancements were made possible only because of the sincere effort and cooperation of all paper manufacturers and receivers in developing the facts relative to causes and effects of damage. As a result of this study and work certain fundamental methods have been successfully adopted.

Skids

Two fundamental methods are now in use at most of the paper shippers' plants. First, there is what is known as the *full floating* method which involves the assembly of two or more skids bound together with flat steel bands. These bands encircle the larger units either horizontally or diagonally. Under this method the unit is free to shift under impact and come to a sliding rest through friction with the floor of the car. The amount of movement of a given unit is, of course, dependent upon the character of the contacting surfaces—i.e., skid runners against the floor.

Semi-Floating Bracing

There are receivers who prefer a modified form of the full floating method which is now termed the *semi-floating* bracing procedure. This employs the use of anchor plates threaded to flat bands and then nailed to the car floor 4 or 5 feet from the front and rear of the unit. One or two bands are used vertically for each row of skids dependent upon the quality of the paper and the routing over which the cars are moved. Through this method, because of the application of the bands in a vertical plane and due to the bands being fixed to the floor, additional friction between the skid runners and the floor of the car is obtained. The unit therefore is flexible but is restricted in movement. Under this method only 1 by 4 or 1 by 6-inch vertical members are toe nailed to the front and rear of the unit over which the flat bands are tensioned. This is an economical job of bracing and has proved adequate.

Horizontal or Fixed Bracing

Another method that is being used successfully is known as the *horizontal anchor* or *fixed* method of bracing. For this method of bracing the anchor plates are threaded to one end of the flat band and then nailed to the car side walls in a horizontal plane around a wood gate construction at the front of the unit only. The anchor plates should always be nailed to the car studding and the number of bands to be used is dependent upon the height of the unit of skids. The construction of the gate should be substantial enough to prevent breakage or flexing and be of the same dimension as the face of the unit.

Rolls

There are a number of methods now in use for bracing rolls of paper stowed on bilge, but again the procedure that has been found most satisfactory is in the assembly of units bound tightly with flat steel bands. The reason, of course, is to prevent chafing of individual rolls which is one of the primary causes for damage. The chafing of individual rolls is the result of oscillation due basically to what is commonly known as vertical oscillation which takes place under impact. Another cause for damage, of course, is the movement of the rolls over rough car floors. The best solution of this annoying problem is to remove the rolls from contact with the car floor. Unusual success in the prevention of chafing has been found through the use of what is known as the *skid check* method. In this procedure two pieces of 1 by 6 or 1 by 8-inch top surface boards are used as skids for a given number of rolls. One 2-inch hole is bored at each end of each skid board and the flat steel band threaded vertically through the holes. The position of the holes is predetermined by the size and number of rolls in the unit. The rolls are then placed on the boards and the two bands are tensioned tightly and sealed. This results in not only removing the rolls from the floor but provides for mass weight of from 10,000 to 15,000 pounds per unit. It should be pointed out that these units should consist of either five or three rolls as vertical pressure and continuous contact of the bands with all rolls are needed. This is obtained through the tensioning and sealing of the bands around a unit of five or three rolls. Under this method the individual units are free to shift but as a result of frictional contact of the skid boards with the car floors the shift does not become excessive. With this improved method and by removing the rolls from direct contact with the car floor, there is no pull at either end of the units to accentuate oscillation of the bottom rolls of the unit. To prevent side shifting of units and to maintain the units in line under impact, ½ by 2-inch wood guide strips are nailed to the floor of the car at the outside of each skid board. This method has been found effective especialy for bracing book and other fine papers.

Fiber Cradle Method

Another method extensively used is commonly known as the *fiber cradle* method. Under this procedure units of five rolls are asesmbled and flat bands are placed on the floor of the car. Several thicknesses of fiber board are used to almost completely encircle the unit of rolls. The bands are then tensioned and sealed. Again the principle involved with this method is an attempt to remove the rolls from direct contact with the floor of the car to prevent either oscillation

---

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Poland Spring, Me., June 17-19, 1941.

[1] Sales Mgr., Strapping Division, Acme Steel Company, 2840 Archer Avenue, Chicago, Ill.

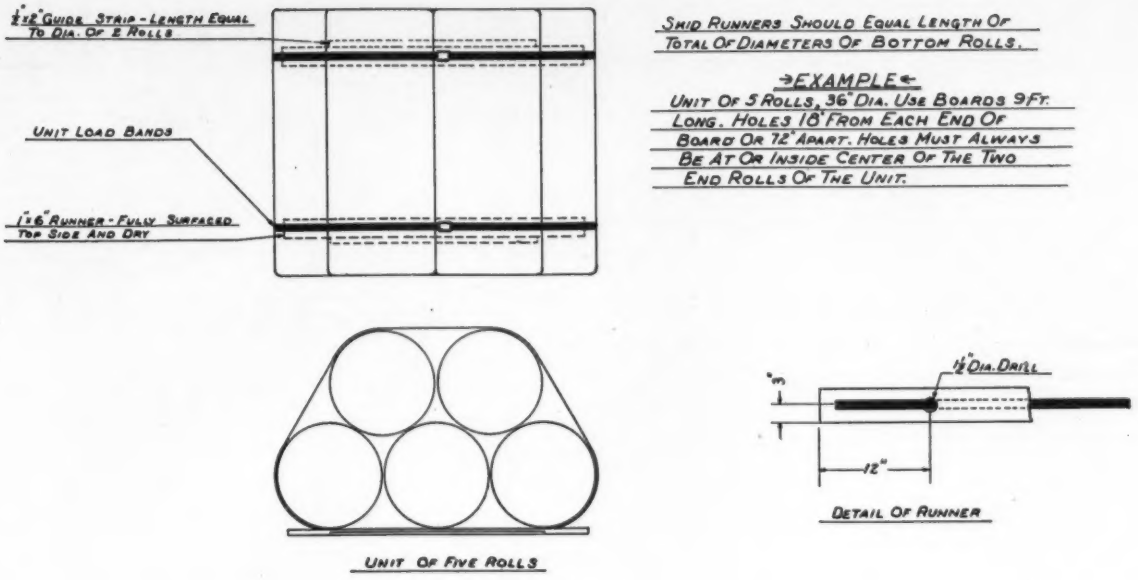

1"x2" Guide Strip - Length Equal To Dia. Of 2 Rolls
Unit Load Bands
1"x6" Runner - Fully Surfaced Top Side And Dry
Skid Runners Should Equal Length Of Total Of Diameters Of Bottom Rolls.
Example
Unit Of 5 Rolls, 36" Dia. Use Boards 9 Ft. Long. Holes 18" From Each End Of Board Or 72" Apart. Holes Must Always Be At Or Inside Center Of The Two End Rolls Of The Unit.
Unit Of Five Rolls
½" Dia. Drill
12"
Detail Of Runner

FIG. 1
Skid Check Method for Unit 5 Rolls Paper

or rubbing of the rolls against the car floor. If it could be assumed that the car floors were perfectly smooth and had no projecting surfaces this method would no doubt function with equal efficiency as the *skid check* method. However, since it is not always possible to obtain cars with smooth floors, there will exist the potential possibility of damage. This particular method lacks the rigidity of the skid check method and will not entirely eliminate the possibility of side shifting of the units.

A compromise of these two methods was recently worked out in employing the *vertical anchor* method for bracing units of boxboard and other heavy papers. In this procedure 1 by 8-inch top surface boards are placed parallel with and throughout the length of the car floor with the boards held in position through

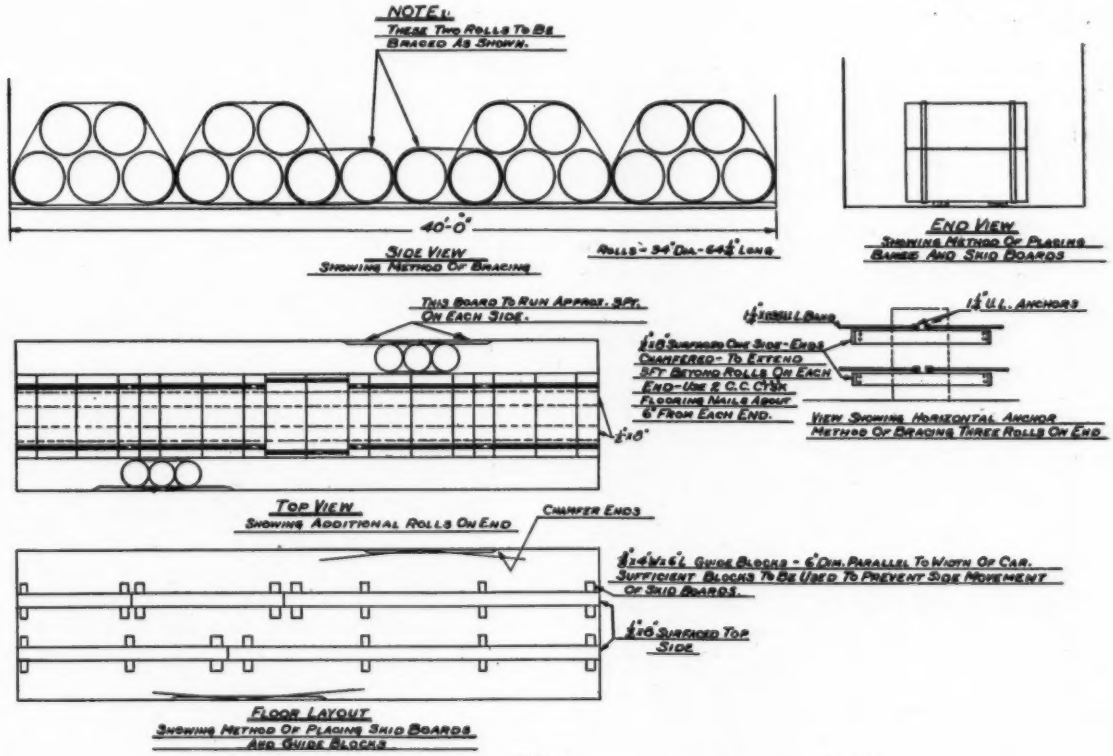

Note:
These Two Rolls To Be Braced As Shown.
40'-0"
Side View
Showing Method Of Bracing
Rolls - 34" Dia. - 64" Long
End View
Showing Method Of Placing Bands And Skid Boards
This Board To Run Approx. 3 Ft. On Each Side.
1"x8" Surfaced One Side - Ends Chamfered - To Extend 3 Ft. Beyond Rolls On Each End - Use 2 C.C. Cyclix Flooring Nails About 6" From Each End.
½" Steel Band
1" U.L. Anchors
View Showing Horizontal Anchor Method Of Bracing Three Rolls On End
Top View
Showing Additional Rolls On End
Chamfer Ends
1"x4"x2'-6" Guide Blocks - 6" Dia. Parallel To Width Of Car. Sufficient Blocks To Be Used To Prevent Side Movement Of Skid Boards.
1"x6" Surfaced Top Side
Floor Layout
Showing Method Of Placing Skid Boards And Guide Blocks

FIG. 2
Combination Method Bracing Rolls of Paper

the use of guide blocks ⅜-inch thick, 4 inches wide, and 6 inches long. The guide blocks prevent movement of the skid boards. The flat steel bands are anchored to the floor of the car and tensioned and sealed over the top of units of five. Under this particular method vertical pressure is exerted between the rolls and the skid boards to create additional frictional contact and results in restricting the movement of the units. The heavier paper stock in rolls is being moved to destination under this method without damage. A similar method with the bands applied horizontally can be used for bracing a few rolls at the car sides where it is necessary to obtain weight. An improvised method for doing this job very successfully is the employment of the *horizontal anchor* method with the anchor plates attached to the car side walls and the flat bands tensioned and sealed around the unit of two or more rolls in a horizontal plane. Again with this procedure it is necessary to use top surfaced boards nailed to the side walls of the car and each end chamfered to remove the chance of the rolls contacting the car wall surface and the possibility of damage from the anchor plates due to slight possible movement.

Bundles

Bundles of paper or paper bags can be successfully braced under the *horizontal anchor* method. Oftentimes it is necessary to use a light wood gate construction. In other instances only heavy paper is used between the bands and the product itself.

More Efficient Than Former Practice

As a result of trial and error with all of these methods, it has been proved conclusively that they are preferable from all points of view and infinitely more efficient than the former practice of using what is known as continuous bracing methods. The reason, of course, is that the impacts to the products under these various methods are dissipated through friction and are not transmitted to the lading or individual packages.

FIG. 4
Doorway Protected with Bands

Will Successfully Meet Issue

Perhaps during the present emergency and due to possible car shortages, it may become necessary to load cars heavier than at present. Should this circumstance arise, there is no question but what the industry will be able to successfully meet the issue without sacrifice of the gains already made in assuring damage free arrival.

FIG. 3
Horizontal Bands Anchored to the Car Wall

FIG. 5
Bands Tensioned and Sealed around Face of Unit

"NON-USERS ARE THE LOSERS"

TENAX FELTS

50TH ANNIVERSARY

"through the years"

Each year the papermill superintendents have carried current problems to their Convention. Many have been concerned with the *operation of felts*. We are proud to remember how often TENAX FELTS have helped in solving those problems — again we say: "for constant helpfulness in producing perfect paper, complete assurance of uniformity, less water after leaving the presses, and long-lasting profitable usefulness, specify TENAX FELTS."

"Non-Users Are The Losers"

1891 - LOCKPORT FELT COMPANY - 1941

NEWFANE, N. Y. — U. S. A.

KALAMAZOO

TILE CHEST

Adapted for Use with Agi-flo Pump

The Shartle Agi-flo agitates and delivers the stock. The Kalamazoo Glazed Tile Chest gives you the advantages of low cost storage and the utmost in cleanliness.

More than 700 installations of Kalamazoo Glazed Tile Tanks now in use prove their unvarying dependability. For maximum efficiency plan to use a Kalamazoo Chest with your next Agi-flo, or any other type of agitator.

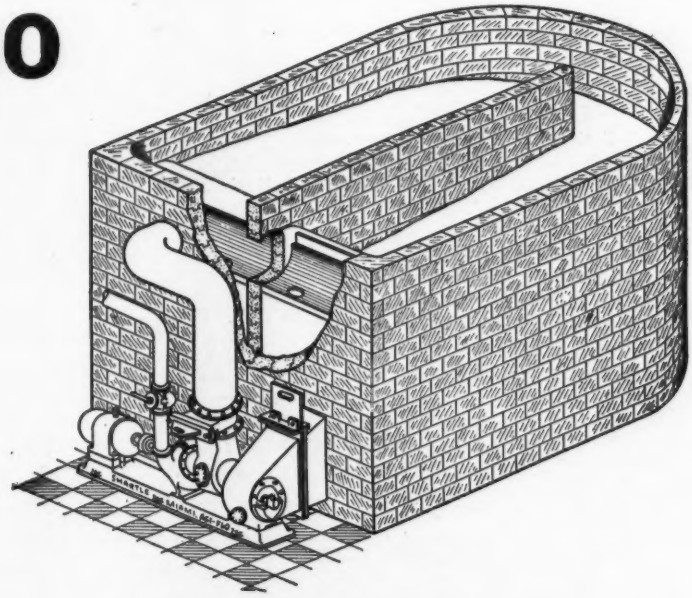


Illustration courtesy of Shartle Brothers Machine Company, manufacturers of the Shartle Agi-flo Pump.

GLAZED TILE

KALAMAZOO TANK & SILO CO.

KALAMAZOO, MICHIGAN

WOOD

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING JUNE 21, 1941

SUMMARY

Cigarette paper .....270 cs.
Newsprint .....588 bls., 14,146 rolls
Wrapping paper .....1,052 bls., 14 rolls
Tissue paper .....56 bbls., 22 cs.

CIGARETTE PAPER

American Tobacco Co., ———, Petsamo, 17 cs.
P. Lorillard Co., Inc., ———, Petsamo, 253 cs.

NEWSPRINT

Walker Goulard Plehn Co., ———, Petsamo, 15 rolls, 349 bls.
H. Reeve Angel & Co., Inc., ———, Petsamo, 239 bls., 1,026 rolls.
International Paper Co., ———, Gatineau, 286 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 400 rolls.
———, ———, Liverpool, N.S., 3,683 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 337 rolls.
———, ———, Comeau Bay, 7,723 rolls.
H. G. Craig Co., Inc., ———, Donnacona, 389 rolls.
International Paper Co., ———, Gatineau, 287 rolls.

WRAPPING PAPER

Walker Goulard Plehn Co., ———, Petsamo, 625 bls.
Northern States Envelope Co., ———, Petsamo, 98 bls.
Berkowitz Envelope Co., ———, Petsamo, 85 bls.
Manco Paper Co., ———, Petsamo, 154 bls.
Jay Madden Corp., ———, Petsamo, 90 bls.
Arkell Safety Bag Co., ———, Petsamo, 14 rolls.

TISSUE PAPER

H. M. Storms Co., ———, Petsamo, 56 bls.
General Electric Co., ———, Petsamo, 22 cs.

RAGS, BAGGINGS, ETC.

Manufacturers Trust Co., ———, Recife, 49 bls. cotton linters.
Lush Cotton Products, Inc., ———, Recife, 102 bls. cotton linters.
Commercial Nat'l Bank Trust Co., ———, Recife, 109 bls. cotton linters, 158 bls. cotton waste.
Schimer Trading Corp., ———, Recife, 87 bls. cotton linters.
Irving Trust Co., ———, Recife, 157 bls. cotton linters.
Lush Cotton Products, Inc., ———, Natal, 382 bls. cotton linters.
Cowa & Co., ———, Natal, 58 bls. cotton linters.
S. Godfrey, Ltd., ———, Buenos Aires, 56 bls. rags.
Castle & Overton, Inc., ———, Buenos Aires, 20 bls. colored threads, 2 bls. old hemp canvas.
M. Granatstein & Sons, ———, Buenos Aires, 6 bls. wipers.
H. R. Smith, ———, Cristobal, 13 bls. cotton waste.
National Bank Trust Co., ———, Cristobal, 92 bls. cotton linters.
———, ———, Cristobal, 20 bls. cotton linters.
Wessel Duval & Co., ———, Cristobal, 58 bls. cotton linters.
Hercules Powder Co., ———, Santos, 2,108 bls. cotton linters.
West Texas Cottonoil Co., ———, Santos, 2,632 bls. cotton linters.
Irving Trust Co., ———, Rio de Janiero, 71 bls. cotton waste.
West Texas Cottonoil Co., ———, Buenos Aires, 1,008 bls. cotton linters.

WOOD PULP

Pulp Sales Corp., ———, Petsamo, 50 bls. easy bleaching sulphate, 10 tons; 1,554 bls. prime strong sulphate, 257 tons.

WOOD PULP BOARDS

Jay Madden Corp., ———, Petsamo, 1,290 bls., 2,759 rolls, 672 tons.
Johaneson Wales & Sparre, Inc., ———, Petsamo, 190 rolls, 46 tons.

HIDE GLUE

Trans-Atlantic Animal By-Products Corp., ———, Montevideo, 208 bags.

GLUE STOCK

National City Bank, ———, Vera Cruz, 233 bls.

CASEIN

National City Bank, ———, Buenos Aires, 1,835 bags.
American British Chemical Supplies, ———, Buenos Aires, 1,627 bags.
Casein Co., of America, Inc., ———, Buenos Aires, 1,642 bags.
Eugenio Lang, ———, Buenos Aires, 834 bags.
Fleischman Burd & Co., Inc., ———, Buenos Aires, 184 bags.
American Cyanamid & Chemical Corp., ———, Buenos Aires, 834 bags.
H. S. Cramer & Co., ———, Buenos Aires, 3,085 bags.
A. Hurst & Co., Inc., ———, Buenos Aires, 1,168 bags.
Chase National Bank, ———, Buenos Aires, 334 bags.
National City Bank, ———, Buenos Aires, 1,334 bags.
Packing Products Co., ———, Buenos Aires, 835 bags.
Casein Co. of America, Inc., ———, Buenos Aires, 2,550 bags.
H. S. Cramer & Co., ———, Buenos Aires, 1,167 bags.
Casein Co., of America, Inc., ———, Buenos Aires, 1,700 bags.
Chase National Bank, ———, Buenos Aires, 2,008 bags.

Paper Men Play Golf

PHILADELPHIA, Pa., June 23, 1941—The Philadelphia Paper and Cordage Association, Inc., held the third tournament of its golf schedule in combination with the regular annual outing at Manufacturers Golf and Country Club on June 17, with Dick Richards of Buffalo Envelope Company as golf host for the day. Forty golfers teed off.

Included in the prizes were the Jessup & Moore golf trophy, which will be played for on October 7 at Pine Valley, and president Jack Shinners golf trophy, to be awarded at the annual Christmas Party of the Association. This latter trophy will be awarded to the most consistent player over the Marble Hall Links for the season.

The next tournament will be held at St. David's Country Club, Wayne, Pa., on July 15, when the Fred Brower golf trophy will be put in competition, and Hugo Hanson, president of W. C. Hamilton Paper Company, will be the host.

LOOKING FOR BETTER *Smoothness?*

IF your customers demand a cleaner printing surface that makes the type stand out crisp and clear on your boxboard, liner and other papers, here's an invitation to test out the PQ Silicate of Soda method.

The percentage of silicate to add to the beater depends on the furnish and the effects you want. But one thing certain is that mills using PQ Silicate obtain paper or board with an even finish, minus "pick" and "fuzz".

Give your papers the quality, suave look by laying low those stubborn short fibres with PQ Silicate. May we cooperate with you?

SILICATES OF SODA

PHILADELPHIA QUARTZ CO.

General Offices & Laboratory: 125 S. Third St., Phila., Pa.
Chicago Sales Office: 205 W. Wacker Drive. Stocks in 60 cities.
Sold in Canada by NATIONAL SILICATES LTD., Toronto, Ont.

MESCO
Consistency Regulators

Do Regulate

WE HAVE THE PROOF

They

Are easily installed.
Have only one adjustment.
Consume very little power.
Have slight maintenance cost.
Are accurate, dependable and rugged.

Install one on trial now.

Write for particulars.

MERRITT ENGINEERING & SALES CO., Inc.
LOCKPORT, NEW YORK

New York Paper and Pulp Market Review

Heavy Demand For Paper and Paper Board Continues With Some Price Advances On July 1—Paper Board Prices Will Be Stabilized At June 16 Quotations — Domestic Rag Market Reported Firm.

Office of the PAPER TRADE JOURNAL,
Wednesday, June 25, 1941.

Increasing difficulty in making deliveries of many kinds of paper to meet the exceptionally heavy demand, is indicated in reports received from many manufacturers' representatives, jobbers, and general paper merchants during the week.

The index of general business activity advanced to a new high mark of 130.2% for the week ended June 14, from 128.0% for the preceding week, compared with 108.6% for the corresponding week last year.

Paper production for the week ended June 14 was estimated at 99.3%, compared with 91.9% for 1940, with 75.0% for 1939, with 65.6% for 1938, and with 71.0% for the corresponding week for 1937.

Paper board production for the week ended June 14 was 88.0%, compared with 79.0% for 1940, with 67.0% for 1939, with 53.0% for 1938, and with 71.0% for the corresponding week for 1937.

The efforts of the Price Administrator, Leon Henderson, to prevent the strong tendency for a rapid rise in all prices, has checked the impending advance in the prices of paper and many of its products. Under the normal operation of the law of supply and demand, the current heavy buying would undoubtedly have advanced prices to a substantial extent. This strong trend to higher prices has been reflected to a greater extent in paper board than in paper. The former prevailing quotations of $45 per ton on news and chip, is one example of how the normal working out of supply and demand advances prices. As the office of the Price Administrator has stated that the advance in board prices was unjustified by costs, in his opinion, he has issued a quotation level which he considers more equitable. The prices fixed by the Price Administrator on chip and news is $42.50 per ton; on single Manila light chip, $57.50 per ton; and on white patent coated, $72.50 per ton. Paper board prices are thus stabilized at these new quotations.

To what extent other grades of paper and paper board will be affected is uncertain at this date. In general, however, the trade does not expect any criticism from the Price Administrator, as current paper prices are so generally considered low. The paper industry, as are other industries, is now subject to the effect of a controlled economy under the unlimited emergency declaration of the President. The result expected by many in the industry is similar to that in effect under the NRA.

Current prices are firm and unchanged. One leading manufacturer has advanced prices from $5 to $15 per ton on items which are out of line and too low in comparison with present costs, such as tablet paper which will be advanced $15 per ton on July 1.

Chemical Pulp

Contract prices on chemical pulp are stabilized for the third quarter at unchanged quotations. Spot prices, however, are fantastic. An example is a recent resale lot of imported half-prime kraft pulp, which sold at $85 per ton, on dock. The immediate 10% reduction in the use of chlorine in the manufacture of pulp, with further reductions impending, has exerted pressure on spot prices on bleached chemical pulps, which are not at high premium quotations.

Rags

The domestic rag market is reported firm. Mill buying is fair at this date. Representative quoted market prices remain unchanged.

Old Rope and Bagging

Demand for old Manila rope is active at this date, with supplies reported in some quarters of the trade as difficult to obtain. An average price of 6.00 prevails in the market on No. 1 manila this week.

Old bagging is in heavy demand, with dealers generally reporting difficulty in obtaining adequate supplies. Prices hold firm with no important changes from prevailing quotations.

Old Waste Paper

Waste paper prices apparently will be stabilized at a fair level as dealers met with the officials of the Price Administrator Office last week at Washington, and as individuals, voluntarily pledged to maintain prices at the levels prevailing on June 16. The current quotation on strictly folded news is .65; on corrugated, .80, and on No. 1 mixed paper, .57½.

Twine

Buying is reported heavy in many grades of twine at this date. This market is strong, with imported fibers in a very favorable position, and the trade expecting some further upward price revisions in the imported fibers. Current prices are unchanged.

Warren Gilman Jones Dead

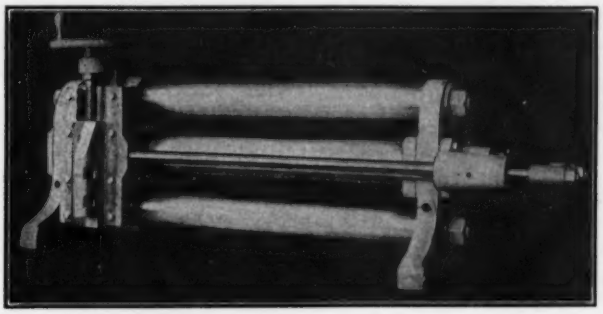
Warren Gilman Jones, president of the W. A. Jones Foundry and Machine Company, Chicago, Ill., died of a heart attack at his home in River Forest, Ill., on June 6. Funeral services were held on the following Saturday afternoon.

Warren G. Jones was very well known in industrial and engineering circles. He was born in Chicago in 1890 and entered his father's firm in 1910. Since 1925 he had been President. He was also vice-president of the Sackett Screen and Chute Company of Chicago.

Mr. Jones is survived by his widow, Gertrude, three children—Mrs. Marion Beales, Warren G., Jr., and Thomas A. Jones—and three grandchildren. His sons are connected with W. A. Jones Foundry and Machine Company.

Paper Box Shipments Up

Folding paper box shipments into the metropolitan New York area by members of the Folding Paper Box Manufacturers Association totaled $893,705 in May, comparing with an April total of $932,860, and May, 1940, shipments of $781,203, the association reported last week.



Curtis Hydraulic Grinder Lathe

Artificial pulp stones call for maximum rigidity of the stone dressing appliance. To meet this need in the case of 3-Pocket Grinders our Curtis Hydraulic Lathe was completely redesigned as shown in the illustration above.

The new design has now been in use for about five years.

Full attention is given in its construction to the use of materials to resist the corrosive action of hot pulp.

Adapted to all makes of 3-Pocket Grinders, old or new.

Full particulars will be sent on request.

Montague Machine Company
Turners Falls, Mass.

Good Winders
are easy to operate
CAMACHINES are well designed Winders with convenient location of cutters, facilities for quick respacing of cutters, also for easy threading of web. Riding roll and rewind shaft are easily raised and lowered. All controls are handy to the operator. The capacity to produce good rolls is not left to the skill of the operator, but is built into the winder. Write for interesting folder.
CAMERON
MACHINE COMPANY
61 Poplar St.
BROOKLYN, N.Y.
Slitting and Roll-Winding Machine Headquarters

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 25, 1941.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported steady for the week. The pulp is currently quoted at $35 per ton in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm. Market in very strong position this week under heavy demand. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are higher. Demand active for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 21 cents per pound; 80-100 mesh, at 22 cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 20 cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are unchanged. Demand reported good for the week. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine is reported heavy. Prices are firm and the market is very strong for the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on most grades of rosin are higher for the week. "G" gum rosin is currently quoted at $1.93 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $1.93 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.60 per 100 pounds f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand good, with current quotations nominal. Domestic salt cake is currently quoted at $16 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lot, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported active. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand for iron-free heavy for the current week. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.60 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$6.00
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.50	"	5.00
Standard Wrapping	4.50	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	42.50	@	—
Chip	42.50	"	—
Sgl. Mla. Ll. Chip	57.50	"	—
White Pat. Coated	72.50	"	—
Kraft Liners	55.00	"	—
Binders Boards	80.00	"	—

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10 @	$46.00	$40.25 @	$47.25
100% Rag	31.05 "	36.50	32.20 "	37.75
85% Rag	.... "	....	29.90 "	35.00
75% Rag	23.60 "	27.75	24.75 "	29.00
65% Rag	.... "	....	21.65 "	26.25
50% Rag	17.55 "	21.50	18.70 "	22.75
25% Rag	14.65 "	17.75	15.80 "	19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$9.35 @	$11.50	$11.55 @	$12.75
No. 2	8.50 "	10.25	9.65 "	11.75
No. 3	8.05 "	9.25	9.20 "	11.25
No. 4	7.70 "	9.50	8.90 "	10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	9.05	"	10.50
No. 2 Offset	8.40	"	9.75
A Grade E. F.	8.20	"	9.50
A Grade S. & S. C.	8.45	"	9.75
B Grade E. F.	7.65	"	8.75
B Grade S. & S. C.	7.90	"	9.00
C Grade E. F.	7.35	"	8.50
C Grade S. & S. C.	7.60	"	8.75
D Grade E. F.	7.10	"	8.25
D Grade S. & S. C.	7.35	"	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	3.87½
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.75
Strong Unbleached Sulphite	3.17½	"	3.75
News Grade, delivered			
Unbleached Sulphite	61.00	"	64.25
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	—
Kraft Light & Strong	3.75	"	4.15
Kraft No. 1	3.60	"	4.00
(F. o. b. Pulp Mill)			
Kraft Domestic and Canadian	2.75	"	3.37½
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.00	@	6.25
Silesias No. 1	4.25	"	4.50
New Unbleached	6.00	"	6.25
Blue Overall	4.25	"	4.75
Fancy	2.25	"	2.50
Washables	2.00	"	2.13
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	3.10	"	3.35
Miscellaneous	2.35	"	2.65
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	1.25	"	1.35
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.30	"	1.35
No. 2	1.20	"	1.25
No. 3 (bagging)	.95	"	1.00
No. 4	.90	"	.95
No. 5A	.90	"	.95

Foreign Rags

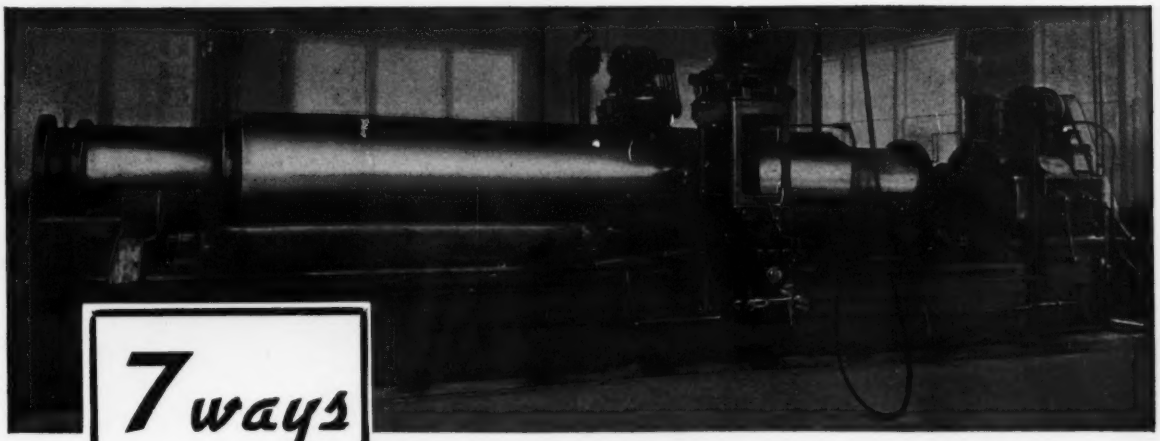
All prices nominal.

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—



7 ways to save on ROLL GRINDING

SAVE, because the Lobdell V-belt wheel drive increases power and rigidity—operates more surely, more swiftly. SAVE, because Lobdell design permits rolls to be placed directly from crane or hoist; has no obstruction to cause delay. SAVE, because screw-well is fully enclosed; no water or grit can destroy its efficiency. SAVE, because bed ways are lubricated automatically, take no maintenance time. SAVE, because Lobdell makes easy provision for keeping the bed in alignment. SAVE, because crown is predetermined quickly by a single micrometer adjustment. SAVE, because the grinder has rigid support under the grinding wheels for *all* roll diameters.

Only the Lobdell Grinder has *all* these advantages! Compare the features point-by-point; see why you safely can follow the lead of more than 70 leading mills who use it. *Complete information yours for the asking; a note on your letterhead brings it.*

LOBDELL

ROLL GRINDER

A Product of the **LOBDELL CAR WHEEL COMPANY**

Wilmington, Del. • 105 Years in Business

APPLETON WIRES are GOOD WIRES

APPLETON WIRE WORKS, INC.
APPLETON, WIS.

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.15	@	4.25
Wool Tares, light....	2.50	"	2.75
Wool Tares, heavy..	2.50	"	2.75
Bright Bagging.....	3.15	"	3.30
Manila Rope—			
Foreign	5.75	"	6.00
Domestic	5.75	"	6.00
Jute Threads.....	2.75	"	3.00
Sisal Strings	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.75	"	3.00
Soft White No. 1..	2.35	"	2.50
Soft White Extra..	2.70	"	2.85
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag.....	.90	"	1.00
Solid Flat Book....	.90	"	.95
Crumbled No. 1...	.70	"	.75
Ledger White Stock.	1.65	"	1.75
Ledger Stock Colored	1.20	"	1.30
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.80	"	1.90
Old Kraft Machine Compressed bales..	1.35	"	1.50
News—			
No. 1 White News	1.50	"	1.60
Strictly Overissue..	.96	"	1.00
Strictly Folded....	.65	"	—
Corrugated	.80	"	—
No. 1 Mixed Paper..	.57½	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.19½	@	—
White Hemp	.19½	"	—
Fine Polished—			
Fine India.....	.22½	"	—
Unpolished—			
Box	.15¾	"	—
Paper Makers.....	.15½	"	—
Tube Rope.....	.16¾	"	—
Wall Paper.....	.19½	"	—
Wrapping	.19½	"	—
Soft Fiber Rope...	.17½	"	—
Cotton	.24	"	—

(Hard Fiber)

Medium Java.....	.12	"	—
Mex. Sisal.....	.11	"	—
Manila	.25	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.06½	@	.06¾
New White No. 2.	.03½	"	.04
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04
Black Silesias, soft	—	"	.03
New Unbleached..	.06¼	"	.06½
Washable Prints..	.02½	"	.03
Washable No. 1..	—	"	.01½
Blue Overall.....	.04	"	.04½
Cottons—According to grades—			
Washable shredding	—	"	.01½
Fancy Percales....	.03	"	.03¼
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02	"	.02½
Corduroy	.01¼	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.35	"	1.50
Repacked	1.55	"	1.65
Black Stockings (Export)	Nominal		
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	1.30	"	1.35
Domestic No. 2...	1.10	"	1.15
Roofing Bagging..	1.00	"	1.05

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	3.25	@	3.75
Domestic	3.00	"	3.25
Manila Rope.....	—	"	5.50
Sisal Rope.....	2.00	"	2.25
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	—	"	1.50
Wool Tares, heavy..	3.75	"	4.00
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.25	"	3.50

Old Papers

(F. o. b. Phila.)

Shavings—			
Hard White Special	2.75	@	2.85
Hard White.....	2.50	"	2.60
No. 1 Soft White..	2.00	"	2.25
No. 2 White.....	1.85	"	1.90
No. 1 Mixed.....	1.00	"	1.20
Solid Ledger Stock..	1.90	"	2.00
Ledger Stock, white.	1.60	"	1.75
Ledger Stock, colored	1.30	"	1.40
No. 1 Books, heavy..	.95	"	1.00
Manila Cuttings.....	1.90	"	2.00
Print Manila.....	.60	"	.65
Container Manila....	.50	"	.55
Kraft Paper.....	1.40	"	1.45
No. 1 Mixed Paper..	.60	"	—
Straw Board Chip...	.50	"	—
Binders Board Chip..	.50	"	—
Corrugated Board....	.80	"	—
Overissue News.....	.85	"	.90
Old Newspapers.....	.60	"	—

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.15	@	3.25
No. 1 Soft White	2.50	"	2.75
No. 2 Mixed.....	.90	"	1.00
Solid Ledger Books..	2.00	"	2.10
Overissue Ledger Stock	1.75	"	2.00
White Ledger Stocks	1.50	"	1.65
Mixed Ledgers	1.25	"	—
No. 1 Heavy Books	1.10	"	1.20
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock	1.15	"	1.20
Manila Env. Cuttings	3.00	"	3.25
Manila Envelope Cuttings, extra quality	2.75	"	3.00
White Blank News..	1.70	"	1.80
No. 1 Kraft.....	1.35	"	1.45
Extra No. 1 Kraft..	1.75	"	—
Mixed Papers.....	.57½	"	—
Print Manila.....	.70	"	—
Container Manila....	.65	"	.75
Old Newspapers.....	.65	"	—
Paper Wool Strings.	.95	"	1.15
Overissue News.....	.65	"	.70
Box Board Chips....	.35	"	—
Corrugated boxes....	.80	"	—
Kraft corrugated boxes	1.20	"	1.25
New Kraft Corrugated Cuttings	1.75	"	2.00
Screening Wrappers.	.85	"	.90

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	3.75	@	4.00
Sisal Rope.....	2.60	"	2.75
Mixed Rope	.85	"	1.00
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Soft Jute Rope.....	4.25	"	4.75
Manila Rope—			
Foreign .....(nominal)			
Domestic	5.75	"	6.00
Jute Carpet Threads.	3.00	"	3.25
Bleachery Burlap....	5.00	"	5.50
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.25	"	3.75
Scrap Sisal.....	2.75	"	3.00
Scrap Sisal for Shredding	3.00	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	2.85	"	3.00
Aust. Wool Pouches.	3.75	"	4.00
New Burlap Cuttings	4.00	"	4.25
Heavy baling bagging	3.25	"	3.50
Paper Mill Bagging..	2.75	"	3.00
No. 2 Bagging.....	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.03¾	"	4.00
New White No. 1.	.06	"	.06¼
New Light Flannelettes	.03¾	"	4.00
Canton Flannel, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¾
Silesias No. 1.....	.04	"	.04¼
New Black Silesias..	4.00	"	—
Red Cotton Cuttings	.04	"	.05
Soft Unbleached....	.06	"	.06¼
Blue Cheviots.....	.04¼	"	.04½
Fancy	.01½	"	.01¾
Washable	.01½	"	.01¾
Cottons—According to Grades—			
Blue Overalls.....	.04	"	.04¼
New Black, Soft..	.03	@	.03¼
Khaki Cuttings.....	.02	"	.02¼
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	—
New Canvas.....	.05½	"	—
B. V. D. Cuttings...	.06	"	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	"	2.25
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	2.00	"	2.25
Old Blue Overalls...	1.60	"	2.00
Thirds and Blues....	1.25	"	—
Miscellaneous	1.25	"	1.35
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.20	"	1.25
No. 2.....	.95	"	1.00
No. 3.....	.85	"	.95

Foreign Rags

(F. o. b. Boston)

Canvas .....(nominal)	
Dark Cottons.....(nominal)	
Dutch Blues.....(nominal)	
New Checks and Blues(nominal)	
Old Fustians.....(nominal)	
Old Linsey Garments.(nominal)	
New Silesias.....(nominal)	

CHICAGO

Waste Paper

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	3.15	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White.	2.00	"	2.20
Ledger and Writings	.85	"	.95
Solid Books.....	.83	"	—
Blanks	1.45	"	—
Krafts	1.40	@	1.50
New Kraft Cuts....	1.60	"	1.75
Overissue News.....	.90	"	—
Old Newspapers—			
No. 1 Folded News	.70	"	.80
No. 1 Mixed Paper	.55	"	.60
Roofing Stocks—			
No. 1.....	.95	"	1.00
No. 2.....	.85	"	.90

J. D. Biggers to Head Paper Section

WASHINGTON, D. C., June 24, 1941—In an effort to save on time and personnel the Office of Production Management has adopted a plan to set up about thirty industry committees, each matched by an OPM commodity section, William S. Knudsen, director general announced today. He revealed also that the OPM would take over from consumer-goods industries any machine tools vital to defense.

Under the reorganization plan, Mr. Knudsen said, each major industry will deal with a single division of the OPM through a commodity section instead of having to go in turn to the production, priorities and purchases divisions. The industry advisory committee, which will be selected by the OPM from lists of nominees provided by each industry, will enable the OPM to discuss problems of a particular industry in expeditious manner, he said.

Mr. Knudsen said that two major objectives were involved in the plan, which has been forecast for some time. These he described as "one, a close and unified working relationship between members of the several divisions concerned with the same commodity or material, and two, efficient liaison between defense agencies and industry."

The three division directors, John D. Biggers, Donald M. Nelson and Edward R. Stettinius, Jr., are to retain their original staff positions, but in addition each will have charge of a group of commodity sections in which their special problems are of paramount importance. These commodity sections will be made up largely of present OPM employes.

Mr. Biggers will head the commodity sections dealing with steel, aluminum, magnesium, paper, pulp and chemicals.